On Farm Research
AND DEMONSTRATION

Partnership of:

Sugar Beet Growers
Michigan Sugar Company
Michigan State University
Agribusiness

Sugarbeet Advancement
The mission of *Sugarbeet Advancement* is to generate research and utilize education to enhance productivity and profitability of the Great Lakes sugar beet industry.

This will be accomplished through a cooperative effort involving Michigan State University, Michigan Sugar Company, producers and agribusiness.

The *Sugarbeet Advancement* Committee will be active in identifying research needs, conducting educational programming, and identifying promotional and financial support to accomplish established goals.
PREFACE

The Sugarbeet Advancement Committee is proud to present you with the 12th edition of the “Sugarbeet on Farm Research and Demonstration Report.” This document is a compilation of research involving new varieties, products, production practices, and other issues that are important to improving sugarbeet management. The 24 member Advancement Committee is active in determining priorities. This year 31 trials were established in Michigan and Ontario and only two were abandoned due to adverse weather that made results unreliable.

In 2008 Michigan Sugar Company produced over 4.1 million tons of beets. A new record yield of 28.88 tons per acre and 18.2% sugar was achieved. This shattered the old record by about 4 tons per acre. Certainly adequate moisture and a moderate summer temperature played a large role in this achievement. However, do not underestimate the role that improved grower management has played. These practices include: early planting, reduced tillage, increased populations, better disease control, improved fertility and better varieties. Sugarbeet Advancement is pleased to have played a significant research role in each of these practices.

To effectively utilize this year’s research report make sure that you analyze each trial individually and read any comments that are written. Because we are conducting large scale research under the farmer’s management, comments are made to reflect pertinent trial information/conditions. Trials are replicated to allow good statistical analysis to be performed. Trial reliability is stated for each location.

In the future Sugarbeet Advancement will continue to work on production issues that are critical to improving yield, quality and profitability. With the varieties that are available, along with excellent management practices, these current yields were certainly not an accident. In fact, yield and quality improvements will continue to march forward in the future.

Our challenge to you is to continue to improve quality and your bottom line by adopting some of these research findings on your operation. We are always willing to work with growers that have new ideas or want to test current research on your farm. Take the Sugarbeet Advancement Challenge!

Sincerely,

Mark Lumley
Sugarbeet Advancement Chair

Steven Poindexter
Sugarbeet Extension Educator
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Special Thanks to Sugarbeet Advancement Partners:

Producer Cooperators Hilleshog Seeds – Doug Ruppal
Michigan Sugar Company and Agriculturists GTG – Randy Hemb
MSU Extension Agents Tri County Equipment
MSU Ag Experiment Station Sugarbeet Advancement Committee
BetaSeed – Rob Gerstenberger Tom Wenzel – Sugarbeet Advancement
ACH Seeds – Andy Bernia B & B Research Farm – Paul Horny & Dennis Fleishman
**COMMITTEE LIST**

<table>
<thead>
<tr>
<th>Name</th>
<th>Company/Address</th>
<th>Phone Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dave Bailey</td>
<td>Michigan Sugar Company 10338 North Dean St. Louis MI 48880</td>
<td>989-620-5449 (Cell)</td>
</tr>
<tr>
<td>Warren Bierlein</td>
<td>4785 Lorenzo Road Vassar MI 48768</td>
<td></td>
</tr>
<tr>
<td>Dennis Bischer</td>
<td>2222 N. Verona Road Bad Axe MI 48413</td>
<td>989-269-7957</td>
</tr>
<tr>
<td>Bob Boehm</td>
<td>Michigan Farm Bureau P.O. Box 30960 Lansing, MI 48909</td>
<td>517-323-7000</td>
</tr>
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<td>Clay Crumbaugh</td>
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<td>989-681-3029</td>
</tr>
<tr>
<td>Kurt Ewald</td>
<td>LAKKE-Ewald Farms, Inc. 4949 Unionville Rd. Unionville MI 48767-9724</td>
<td>989-550-1191</td>
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<tr>
<td>Mark Flegenheimer</td>
<td>Michigan Sugar Company 2600 S. Euclid Avenue PO Box 917 Bay City MI 48706</td>
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</tr>
<tr>
<td>Ralph Fogg</td>
<td>2600 S. Euclid Avenue PO Box 917 Bay City MI 48706</td>
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<tr>
<td>Dave Ganton</td>
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<td></td>
</tr>
<tr>
<td>Rick Gerstenberger</td>
<td>3800 N. Sheldon Rd. Snover MI 48472</td>
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</tr>
<tr>
<td>Corey Guza</td>
<td>Michigan Sugar Company 2600 S. Euclid Avenue PO Box 917 Bay City MI 48706</td>
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<tr>
<td>Dave Helmreich</td>
<td>6566 Frasier Rd. Bay City MI 48706</td>
<td>989-686-0486</td>
</tr>
<tr>
<td>Lee Hubbell</td>
<td>Michigan Sugar Company 2600 S. Euclid Avenue PO Box 917 Bay City MI 48706-3497</td>
<td>989-686-0161</td>
</tr>
<tr>
<td>Mike Leen</td>
<td>159 S. Howard Avenue Croswell MI 48422</td>
<td>810-679-2240 810-404-0240</td>
</tr>
<tr>
<td>Mark Lumley</td>
<td>2578 Confederation Rd. Sarnia ON N7T 7H3</td>
<td></td>
</tr>
</tbody>
</table>
COMMITTEE LIST

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John Zandstra  
Ridgetown College  
University of Guelph  
Ridgetown ON N0P 2CO

2008 Executive Committee:

Chairman – Mark Lumley  
Vice Chairman – Clay Crumbaugh  
Treasurer – Mike Richmond  
Secretary – Corey Guza  
Fifth Member – Paul Pfenninger
# SUGARBEET ADVANCEMENT COMMITTEE
## 2008 VOTING MEMBERSHIP

### 24 Voting Members

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<tr>
<th>Company</th>
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<tr>
<td>Michigan Sugar Company District Growers</td>
<td>Mark Lumley (Chairman)</td>
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<td>Mike Richmond (Treasurer)</td>
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<td>Michigan State University and University of Guelph</td>
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<td>Christy Sprague</td>
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<td>Sugar Beet Seed Company</td>
<td>Doug Ruppal</td>
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<tr>
<td>Michigan Sugar Beet Growers Co-op Board</td>
<td>Warren Bierlein</td>
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<td>Tom Gettel</td>
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### Ex-Officio Members

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<tr>
<td>Farm Bureau</td>
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</tr>
<tr>
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<td>Mitch McGrath</td>
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<tr>
<td>SBA Director</td>
<td>Steve Poindexter</td>
</tr>
<tr>
<td>Chairman of Michigan Sugar Company</td>
<td>Rick Gerstenberger</td>
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<tr>
<td>Board of Directors</td>
<td></td>
</tr>
<tr>
<td>CEO of Michigan Sugar Company</td>
<td>Mark Flegenheimer</td>
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7.
On Farm Research and Demonstration

TERMINOLOGY

The data in the 2008 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.

**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. Yields were calculated by subtracting 5% tare from the gross tons, unless truck weights were used on the trial.

**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.

**% CJ P** -- Percentage Clear Juice Purity; rounded to the one-tenth decimal point.

**RHIZOCTONIA BEETS** -- Average number of dead or dying beets from Rhizoctonia Crown Rot per indicated length of row. Counts were normally taken in August.

**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. If the difference between treatments is greater than the LSD 5%, it indicates that the treatments being compared are 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.
### 2008 VARIETY TRIAL AVERAGES

**Cooperator:** Average of 4 Variety Trials  
**Tillage:**
**Location:** Ontario, Pigeon, Sandusky, Ithaca  
**Harvest Date:**
**Planting Date:**
**Sample Date:**
**Previous Crop:**
**Herbicides:**
**Soil Type:**
**Replicated:**
**Row Spacing:**
**Seed Spacing:**
**Fertilizer:**
**Fungicide:**

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<th>VARIETY</th>
<th>REV / ACRE</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>100 Ft. of Row</th>
<th>1200 Ft. of Row</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EARLY</td>
<td>MID</td>
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<td>$ 1,273</td>
<td>8758</td>
<td>32.30</td>
<td>270</td>
<td>18.1</td>
<td>95.5</td>
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<td>273</td>
<td>18.2</td>
<td>95.6</td>
<td>54</td>
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<td>32.30</td>
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<td>17.7</td>
<td>95.7</td>
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<td>C-RR827</td>
<td>$ 1,251</td>
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<td>29.85</td>
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<td>19.1</td>
<td>95.7</td>
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<td>LSD (5%)</td>
<td>NS 614</td>
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<td>C.V. (%)</td>
<td>4</td>
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**TRIAL RELIABILITY:** Excellent

**EMERGENCE:**
**CERC. LEAF SPOT:**
**RHIZOCTONIA:**
**NEMATODES:**
**QUADRIS APP:**
**WEATHER:**

**Comments:** See individual trials for specific location data. In some situations, C-RR827 may require an additional Cercospora Leaf Spot spray. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 274.
2008 VARIETY TRIAL AVERAGES

**RWSA**

- HM-27RR: 8500
- HM-28RR: 8000
- HM-29RR: 8500
- C-RR827: 9000

**Tons per Acre**

- HM-27RR: 25.00
- HM-28RR: 27.00
- HM-29RR: 30.00
- C-RR827: 35.00

**RWST**

- HM-27RR: 240
- HM-28RR: 250
- HM-29RR: 260
- C-RR827: 270

**% Sugar**

- HM-27RR: 16.5
- HM-28RR: 17.0
- HM-29RR: 17.5
- C-RR827: 18.0

**% CJP**

- HM-27RR: 94.5
- HM-28RR: 95.0
- HM-29RR: 95.5
- C-RR827: 96.0

**Rhizoctonia Counts**

- Dead Beets per 1200 Ft. of Row
  - HM-27RR: 0
  - HM-28RR: 100
  - HM-29RR: 200
  - C-RR827: 300
2008 VARIETY TRIAL

Cooperator: Brian Fox  
Location: Ontario  
Planting Date: 4/24/2008  
Previous Crop: Corn  
Soil Type: Clay Loam  
Row Spacing: 30"  
Fertilizer: 10 gal. 28% Banded over row, Broadcast 8-39-120 variable, 60 lbs. N Sidedress A.A.

Tillage: Fall Plow - Danish Tine 2x  
Harvest Date: 10/28/2008  
Sample Date: 10/28/2008  
Herbicides: Roundup 2x  
Replicated: 4x  
Seed Spacing: 4.25"  
Fungicide: Headline (57 DSV) Senator + Dithane (112 DSV) Headline (145 DSV)

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<tr>
<th>VARIETY</th>
<th>REV / ACRE</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>POPULATIONS 100 Ft. of Row</th>
<th>RHIZ. 1200 Ft.</th>
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TRIAL RELIABILITY: Excellent

EMERGENCE: Excellent 41,000 plants/acre  
CERC. LEAF SPOT: Good  
RHIZOCTONIA: Low  
NEMATODES: None  
QUADRIS APP: No  
WEATHER: Good Moisture

Comments: Very high yielding trial. Harvest population averaged over 41,000 plants per acre. Good soil moisture conditions. Minimal disease problems. In some situations, C-RR827 may require an additional Cercospora Leaf Spot spray. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 305.

Cooperating Agriculturist: Wayne Martin, Michigan Sugar Company  
Janice LeBoeuf, Ontario Ministry of Agriculture
# 2008 VARIETY TRIAL

<table>
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<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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## TRIAL RELIABILITY:
- **Excellent**

## EMERGENCE:
- Fair - 27,000 Plants /Acre

## CERC. LEAF SPOT:
- Good

## RHIZOCTONIA:
- Very Low

## NEMATODES:
- None Detected

## QUADRIS APP:
- Yes, 8-12 Leaf

## WEATHER:
- Dry Season

**Comments:** Trial was planted in marginally dry soil conditions and was relatively slow to emerge. Stand establishment was adequate but lower than other variety trials. Growing conditions during the season were dry compared to other growing areas. In some situations, C-RR827 may require an additional Cercospora Leaf Spot spray. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 265.

**Cooperating Agriculturist:** Wayne Davis, Michigan Sugar Company
2008 VARIETY TRIAL

Cooperator: Randy Sturm
Location: Pigeon, Huron County
Planting Date: 4/22/2008
Previous Crop: Wheat
Soil Type: Clay Loam
Row Spacing: 28"
Fertilizer: 479# 5-16-34+Micros Broadcast; 22 gal. 28%+ Thio-Sol Broadcast; 20 gal. 28% Sidedressed

Tillage: Fall Chisel - Field Cultivator 2x
Harvest Date: 10/17/2008
Sample Date: 9/22/2008
Herbicides: Roundup 2x
Replicated: 4x
Seed Spacing: 4"
Fungicide: Proline 68 (DSV)
Headline 142 (DSV)

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<tr>
<th>VARIETY</th>
<th>REV / ACRE</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>POPULATIONS 100 Ft. of Row</th>
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TRIAL RELIABILITY: Excellent

EMERGENCE: Excellent - 34,000 Plants/Acre
RHIZOCTONIA: Moderate - Affected Yield
QUADRIS APP: None
CERC. LEAF SPOT: Good
NEMATODES: Not Found
WEATHER: Excellent

Comments: Trial was planted into good soil conditions. Severity of Rhizoctonia would be considered moderate and negatively affected yield particularly in the most susceptible variety. In some situations, C-RR827 may require an additional Cercospora Leaf Spot spray. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 260.

Cooperating Agriculturist: Roger Elston, Michigan Sugar Company
2008 STURM VARIETY TRIAL

**RWSA**

- HM-27RR: 8750
- HM-28RR: 7750
- HM-29RR: 8250
- C-RR827: 8000

**Tons per Acre**

- HM-27RR: 26.00
- HM-28RR: 28.00
- HM-29RR: 30.00
- C-RR827: 32.00

**RWST**

- HM-27RR: 250
- HM-28RR: 260
- HM-29RR: 280
- C-RR827: 300

**% Sugar**

- HM-27RR: 17.5
- HM-28RR: 18.0
- HM-29RR: 18.5
- C-RR827: 19.0

**% CJP**

- HM-27RR: 94.5
- HM-28RR: 95.0
- HM-29RR: 95.5
- C-RR827: 96.0

**Rhizoctonia Counts**

- HM-27RR: 25
- HM-28RR: 50
- HM-29RR: 75
- C-RR827: 125
2008 VARIETY TRIAL

Cooperator: Wadsworth Farms, Inc.
Location: Sandusky, Sanilac County
Planting Date: 4/21/2008
Previous Crop: Dry Beans
Soil Type: Loam
Row Spacing: 28"
Fertilizer: 250# 15-20-3 plus micros
80# Anhydrous Sidedress
Variable rate 0-0-60 Fall

Tillage: Fall Chisel - Field Cultivator 1x
Harvest Date: 11/11/2008
Sample Date: 10/10/2008
Herbicides: Roundup 3x
Replicated: 4x
Seed Spacing: 4"
Fungicide: Proline (63 DSV)

TRIAL RELIABILITY: Excellent
EMERGENCE: Excellent - 43,000 Plants/Acre
CERC. LEAF SPOT: Excellent
RHIZOCTONIA: Heavy
NEMATODES: Not Detected
QUADRIS APP: No
WEATHER: Very Good Moisture

Comment: Trial was planted under good soil conditions. This trial did not have any Quadris applied for Rhizoctonia control. Severity of Rhizoctonia would be considered heavy. Variety C-RR827 was most impacted by Rhizoctonia reducing the stand by 40%. In comparison HM-27RR is the most Rhizoctonia resistant variety with a stand reduction of 11%. The other two varieties are moderate in resistance with HM-28RR at 18% and HM-29RR with 13% reduction of stand. In some situations, C-RR827 may require an additional Cercospora Leaf Spot spray. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 266.

Cooperating Agriculturist: Paul Wheeler, Michigan Sugar Company
### Michigan Sugar Company
#### Official Variety Trial
#### Varieties Approved for Sale - Average of 2 Years
#### 2008

**Nurseries**

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<th>% Suc</th>
<th>% CJP</th>
<th>% Emerg</th>
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**LSD (P=.05)** | 613.8 | 6.65 | 2.08 | 0.35 | NS | NS | 0.34 | E= Excellent
**CV** | 3.8 | 1.27 | 3.25 | 0.98 | 0.47 | 6.48 | 5.00 | G= Good
**Means** | 7567.0 | 249.50 | 30.16 | 17.26 | 94.00 | 65.50 | 3.20 | F= Fair

**P=Poor**

**Crystal RR824** was also given Special Approval but has only been tested one year.

* There will be an addendum to be signed by growers relating to Cercospora & Rhizoctonia control.
Michigan Sugar Company  
**Plant to Stand Trials**  
Average of 3 Locations  
2008

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<th>Variety</th>
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<th>RWST</th>
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**Grand Mean**

**LSD (P=.05)**

**Trial Quality:** Fair & Good  
**Reps:** 6 at two locations  
4 at one location  
**Row Width:** 30 inches  
**Quadris:** 1 app, Rhizoc. Control good  

20.
Michigan Sugar Company  
**Official Variety Trial - 2008**  
Average of 6 Locations  
Sorted by RWSA

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* Lower number indicates more resistance.
### 2008 VARIETY TRIAL RAINFALL DATA (INCHES)
#### NEAREST LOCATION

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* Rainfall data is at the nearest monitoring point to the field. This data was not taken at the field, so some difference may have occurred at the actual location.
2008 NEMATODE / RADISH VARIETY TRIAL

Cooperator: LAKKE Ewald Farms  
Location: Unionville  
Tillage: Fall Plow - Spg Field Cultivator  
Planting Date: 4/19/2008  
Harvest Date: 9/23/2008  
Previous Crop: Wheat/Oil Seed Radish  
Sample Date: 9/18/2008  
Soil Type: Loam  
Herbicides: Microrate 4x  
Row Spacing: 22"  
Replicated: 4  
Fertilizer: 10 gal. 28-0-0 + Micros  
Seed Spacing: 4.5  
Fungicide: Proline (41 DSV), Gem (83 DSV) Inspire (135 DSV)

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<th>TONS / ACRE</th>
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<th>% CJP</th>
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<td></td>
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<td>6</td>
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<td>NS 1.3</td>
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<tr>
<td>C.V. (%)</td>
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<td>10</td>
<td>9.10</td>
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<td>0.8</td>
<td>0.6</td>
</tr>
</tbody>
</table>

TRIAL RELIABILITY: Excellent  
EMERGENCE: Excellent  
QUADRIS APP: Yes  
RHIZOCTONIA: Low  
NEMATODES: High

Comments: These two trials were conducted in the same split field with high levels of sugarbeet cyst nematodes. Oilseed radish was drilled in strips in wheat stubble late summer of 2007. The nematode resistant variety B-5534N was planted on one half of the field and the susceptible variety B-5833R was planted on the other half. Where radish was planted yield and quality were significantly higher. Colonel oilseed radish was planted at a rate of 20 lbs/acre with a cost of $2.10/ lb. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the combined trial average of 242.25.

Cooperating Agriculturist: Craig Rieman, Michigan Sugar Company
**2008 NEMATODE VARIETY TRIAL**

Cooperator: Meylan Farms Inc.  
Location: Auburn, Bay County  
Planting Date: 4/19/2008  
Previous Crop: Pickles / Oat Cover Crop  
Soil Type: Loam  
Row Spacing: 30"  
Fertilizer: 2x2 - 17 gal. 19-17-0, 23.5 gal. 28%  
Tillage: Fall Chisel, Triple K 1x  
Harvest Date: 11/1/2008  
Sample Date: 10/6/2008  
Herbicides: Split Rate 2x  
Replicated: 4x  
Seed Spacing: 4.5  
Fungicide: Proline (48 DSV), Headline (115 DSV), Eminent (167 DSV)

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>10 DAY</th>
<th>20 DAY</th>
<th>30 DAY</th>
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<tr>
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<td>274</td>
<td>17.9</td>
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**TRIAL RELIABILITY:** Excellent

**EMERGENCE:** Excellent - 34,000 Plants/Acre  
**CERC. LEAF SPOT:** Very Good  
**RHIZOCTONIA:** Low to Moderate  
**NEMATODES:** Heavy  
**QUADRIS APP:** Yes, 4-6  
**WEATHER:**

**Comments:** Sugarbeet Cyst Nematodes can significantly reduce tonnage and quality of susceptible varieties.

**Cooperating Agriculturist:** Tom Schlatter, Michigan Sugar Company
2008 NEMATODE VARIETY TRIAL

Cooperator: Wegener Farms
Location: Auburn, Bay County
Planting Date: 4/19/2008
Previous Crop: Dry Beans
Soil Type: Londo Tappen Loam
Row Spacing: 30"
Fertilizer: 15 gal., 19-17-0 Starter
250 lbs. of 33-0-0 Broadcast
200 lbs. of 0-0-60 Broadcast

Tillage: Fall Plow - Danish Tine 1x
Harvest Date: 10/10/2008
Sample Date: 9/29/2008
Herbicides: Nortron - Split Rate 2x
Replicated: 5x
Seed Spacing: 4 9/16"
Fungicide: Proline (48 DSV)
Gem (131 DSV)

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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<td>0.1</td>
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TRIAL RELIABILITY: Excellent

EMERGENCE: Good
RHIZOCTONIA: Heavy
QUADRIS APP: Yes, 2-8 Leaf

CERC. LEAF SPOT: Good
NEMATODES: Moderate
WEATHER:

Comments: Field had a heavy level of Rhizoctonia and moderate level of sugarbeet cyst nematode. B-1643N visually had more Rhizoctonia than B-5833R but still out-yielded it because of nematode resistance.

Cooperating Agriculturist: Tom Schlatter, Michigan Sugar Company
Fall Oat Cover Crop Followed By Stale Seed Bed Planting

No Starter

Starter Mix: 10-34-0 + 28%N

30 Inch Row Canopy

22 Inch Row Canopy

15 Inch Row Canopy
Sugarbeet Diagnostic Field Day

Boron Deficiency

Manganese Deficiency

Rhizomania

Flea Beetle Damage

Sugarbeet Cyst Nematodes
Soil in Crown Increases Rhizoctonia

Band Spraying Quadris/Proline

Clover Plow Down Improves Soil Quality

Glyphosphate Weed Issues

Poor Topping Reduces Quality

Now that’s not topping too far ahead of the harvester!
2008 NEMATODE VARIETY TRIAL

Cooperator: Terry Schindler
Location: Kawkawlin, Bay County
Planting Date: 4/1/2008
Previous Crop: Corn
Soil Type: Clay Loam
Row Spacing: 22"
Fertilizer: 18 gal., 19-17-0 Starter
20 gal. 28% Sidedress

Tillage: Fall Chisel - Danish Tine 1x
Harvest Date: 10/23/2008
Sample Date: 9/19/2008
Herbicides: Nortron
Replicated: 4
Seed Spacing: 4.5"
Fungicide: Inspire (48 DSV)
Gem (120 DSV)

<table>
<thead>
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<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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<td>B-1643N</td>
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<td>C-271</td>
<td>5844</td>
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<td>NS 0.7</td>
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<td>C.V. (%)</td>
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<td>5.57</td>
<td>2</td>
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<td>0.3</td>
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</tbody>
</table>

TRIAL RELIABILITY: Good

EMERGENCE: B-1643N Good; C-271 Fair
RHIZOCTONIA: Heavy - Both Varieties
QUADRIS APP: Yes, 2-6 Leaf
CERC. LEAF SPOT: Good
NEMATODES: Moderate
WEATHER: ----

Comments: Very heavy levels of Rhizoctonia reduced yield in both varieties.

Cooperating Agriculturist: Tom Schlatter, Michigan Sugar Company
2008 NEMATODE VARIETY TRIAL

Cooperator: Vern Stephen  
Location: Bay County  
Planting Date: 4/7/2008  
Previous Crop: Black Beans  
Soil Type: Sandy Loam  
Row Spacing: 30"  
Fertilizer: 10 gal. 19-17-0 + Micros  
105 lbs., 82% at Planting  
180 lbs., 0-0-60 Broadcast

Tillage: Fall Chisel - Field Cultivator 1x  
Harvest Date: 9/24/2008  
Sample Date: 9/24/2008  
Herbicides: Nortron - Micro Rate 4x  
Replicated: 6x  
Seed Spacing: 4.2  
Fungicide: Gem (48 DSV)  
Eminent (106 DSV)  
Headline (151 DSV)

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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<tbody>
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<td>B-1643N</td>
<td>7374</td>
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<td>MIX of 80% R-509 &amp; 20% B-5833 R</td>
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<td>LSD (5%)</td>
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<td>3.08</td>
<td>3</td>
<td>2.7</td>
<td>0.5</td>
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</table>

TRIAL RELIABILITY: Excellent

EMERGENCE: Fair  
RHIZOCTONIA: Heavy  
QUADRIS APP: Yes, 2-8 Leaf  
CERC. LEAF SPOT: Good  
NEMATODES: Moderate  
WEATHER:

Comments: Rhizoctonia pressure was moderate for the mixed varieties and heavy for B-1643N. Even though Rhizoctonia was heavier in B-1643N, the nematode resistant variety out-yielded the susceptible variety mix.

Cooperating Agriculturist: Ron Meyer, Michigan Sugar Company
2008 NEMATODE VARIETY TRIAL

Cooperator: Pat Gruehn
Location: Sebewaing, Huron County
Planting Date: 4/20/2008
Previous Crop: Dry Beans
Soil Type: Sandy Loam
Row Spacing: 22"
Fertilizer: 400 lbs, 3-14-45 Broadcast
35 gal. 28% Nitrogen

Tillage: Fall Chisel - Field Cultivator 1x
Harvest Date: 10/31/2008
Sample Date: 10/1/2008
Herbicides: Pyramin/Dual
Replicated: 5x
Seed Spacing: 4.7
Fungicide: Proline (53 DSV)
            Gem (91 DSV)
            Eminent (141 DSV)

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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<td>B-1643N</td>
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LSD (5%)

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<th>NS 428</th>
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<td>C.V. (%)</td>
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TRIAL RELIABILITY: Excellent

EMERGENCE: Good
RHIZOCTONIA: Low
QUADRIS APP: Yes, 2-6
CERC. LEAF SPOT: Good
NEMATODES: Not Detected
WEATHER: Hail Defoliation - Early Sum.

Comments: Trial located in a known sugarbeet cyst nematode area, but none were found in this trial. Hail defoliation in early summer caused regrowth that may have affected sugar content.

Cooperating Agriculturist: Jeff Elston, Michigan Sugar Company
2008 NEMATODE VARIETY TRIAL

Cooperator: Wasmiller Farms
Location: Saginaw County
Planting Date: 4/21/2008
Previous Crop: Corn
Soil Type: Clay
Row Spacing: 30"
Fertilizer: 15 gal. 10-34-0 + Mn
140 lbs. N from 28%

Tillage: Fall Chisel - Field Cultivator 1x
Harvest Date: 9/24/2008
Sample Date: 9/24/2008
Herbicides: Nortron - Micro Rate 4x
Replicated: 6x
Seed Spacing: 4.2
Fungicide: Quadris (79 DSV)

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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TRIAL RELIABILITY: Excellent
EMERGENCE: Excellent - 33,000 plants/acre
CERC. LEAF SPOT: Excellent
RHIZOCTONIA: Low
NEMATODES: Low Level
QUADRIS APP: Yes
WEATHER: ---

Comments: Sugarbeet cyst nematodes were detected at low levels. In the presence of low levels or no nematodes, resistant and susceptible varieties will yield similarly.

Cooperating Agriculturist: Ron Meyer, Michigan Sugar Company

Partnership of: Sugar Beet Growers
Michigan Sugar Company
Michigan State University
Agribusiness
2008 NEMATODE VARIETY TRIAL

Cooperator: Richmond Brothers Farms, LLC  
Tillage: Fall Mold Board / Fall Field Cultivated Stale Seedbed Planting  
Location: Pigeon, Huron County  
Harvest Date: 10/28/2008  
Planting Date: 4/15/2008  
Sample Date: 10/1/2008  
Previous Crop: Wheat  
Herbicides: Split Rate 2x  
Soil Type: Loam  
Replicated: 5  
Row Spacing: 30"  
Seed Spacing: 4.3"  
Fertilizer: Starter: 5 Gal 28%, 7 Gal 10-34-0, 3 Gal Thio-sol, Mn & B. Manure - 12,000 Gal  
Fungicide: Proline (54 DSV)  
Gem (99 DSV)  
Proline (133 DSV)

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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<tbody>
<tr>
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TRIAL RELIABILITY: Excellent

EMERGENCE: Excellent  
RHIZOCTONIA: Light  
QUADRIS APP: Yes 4-6 Leaf  
CERC. LEAF SPOT: Excellent  
NEMATODES: Not Detected  
WEATHER: 

Comments: B-1643N visually had more Rhizoctonia than B-5833R. In the absence of nematodes the varieties had the same tonnages.

Cooperating Agriculturist: Roger Elston, Michigan Sugar Company
2008 QUADRIS & PROLINE TRIAL

Cooperator: Steve Hoard
Location: Breckenridge, Gratiot County
Planting Date: 4/24/2008
Previous Crop: Black Beans
Soil Type: Loam
Spacing: 30" Row, 4" Seed
Fertilizer: Starter: 15 Gal of 28% & 10-34-0 Mixed with Additives, 100 Lb. of N/Ac. by Urea

Tillage: Fall Subsoiled - Field Cultivator 1x
Harvest Date: 10/24/2008
Sample Date: 10/6/2008
Herbicides: Roundup - 3x
Replicated: 4x
 Variety: C-RR827
Fungicide: Proline (49 DSV), Gem (86 DSV), Proline (133 DSV)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>ECONOMIC NET RETURN</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>RHIZ. COUNTS 1200 Ft. of Row</th>
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AVERAGE: 5854 22.22 263 17.7 95.4 59 389
LSD (5%): 1562 5.66 NS 12 NS 0.7 NS 0.6 78 242
C.V. (%): 17 16.00 3 2.3 0.4 83 39

TRIAL RELIABILITY: Good
EMERGENCE: Good
RHIZOCTONIA: Heavy
CERC. LEAF SPOT: Good Control
QUADRIS APP: Quadris & Proline

Comments: Trial was conducted to compare the efficacy of Quadris (10.5 oz/acre) and Proline (5.7 oz/acre) for control of Rhizoctonia rot of sugar beets. Treatments were applied in a 7 inch band at about the 4 leaf stage (5/29/08). A full rate of Quadris and Proline were combined as an additional treatment. The Proline treatments included a non-ionic surfactant at a rate of 0.25% v/v. Rhizoctonia infestation was heavy and somewhat patchy between replications. Best control and highest yield occurred by combining full rates of Quadris and Proline in a single application but not significantly better than Quadris alone. Under heavy Rhizoctonia levels Quadris may have better efficacy than Proline. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 263. The cost used for Quadris and Proline was $23.90 and $21.29, respectively, plus $7.50 for application.

Cooperating Agriculturist: Dave Bailey, Michigan Sugar Company
2008 QUADRIS & PROLINE TRIAL

Cooperator: Meylan Farms Inc.  
Location: Auburn, Bay County  
Planting Date: 4/19/2008  
Previous Crop: Pickles / Oat Cover Crop  
Soil Type: Loam  
Spacing: 30”, 4.5” Seed  
Fertilizer: 2x2 - 17 gal. 19-17-0  
23.5 gal. 28%  

Tillage: Fall Chisel, Triple K 1x  
Harvest Date: 11/1/2008  
Sample Date: 10/6/2008  
Herbicides: Split Rate 2x  
Replicated: 4x  
Variety: B-1643 N  
Fungicide: Proline (48 DSV)  
Headline (115 DSV)  
Eminent (167 DSV)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>ECONOMIC NET RETURN</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>RHIZ. COUNTS 1175 Ft. of Row</th>
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<tr>
<td>Proline</td>
<td>$1,274</td>
<td>8888</td>
<td>32.46</td>
<td>274</td>
<td>18.1</td>
<td>96.3</td>
<td>1</td>
</tr>
<tr>
<td>Quadris &amp; Proline</td>
<td>$1,241</td>
<td>8813</td>
<td>31.75</td>
<td>278</td>
<td>18.2</td>
<td>96.5</td>
<td>1</td>
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<tr>
<td>Check</td>
<td>$1,216</td>
<td>8295</td>
<td>30.17</td>
<td>275</td>
<td>18.0</td>
<td>96.6</td>
<td>9</td>
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<tr>
<td>Quadris</td>
<td>$1,179</td>
<td>8259</td>
<td>30.93</td>
<td>267</td>
<td>17.7</td>
<td>96.1</td>
<td>2</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>8563</td>
<td></td>
<td>31.30</td>
<td>273</td>
<td>18.0</td>
<td>96.4</td>
<td>3</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>NS 763</td>
<td>NS 2.86</td>
<td>4</td>
<td>0.2</td>
<td>NS 0.4</td>
<td>NS 7</td>
<td>63</td>
</tr>
<tr>
<td>C.V. (%)</td>
<td>6</td>
<td>5.71</td>
<td>1</td>
<td>0.8</td>
<td>0.3</td>
<td>132</td>
<td>50</td>
</tr>
</tbody>
</table>

TRIAL RELIABILITY: Fair

EMERGENCE: Excellent  
RHIZOCOTONIA: Low  
NEMATODES: Yes, Heavy Levels  
QUADRIS APP: Quadris & Proline

Comments: Trial was conducted to compare the efficacy of Quadris (10.5 oz/acre) and Proline (5.7 oz/acre) for control of Rhizoctonia rot of sugar beets. Treatments were applied in a 7 inch band at about the 4 leaf stage (5/21/08). Full rates of Quadris and Proline were combined as an additional treatment. The Proline treatments included a non-ionic surfactant at a rate of 0.25% v/v. Early Rhizoctonia counts in July indicated very low levels of disease. Later counts in August had increased Rhizoctonia incidence but still at a relatively low level. All treatments were significantly better in Rhizoctonia control than the check. However, because of the patchy nature of the disease yields were not significantly different between the treatments. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 273. The cost used for Quadris and Proline was $23.90 and $21.29, respectively, plus $7.50 for application. Confidence in the quality results is low due to Quadris having a lower RWST then the check even though it had a lower Rhizoctonia level.

Cooperating Agriculturist: Tom Schlatter, Michigan Sugar Company
Rhizoctonia is a major root disease in the Great Lakes growing area that has significantly reduced tonnage in many fields. Many growers are managing this disease by timely applications of Quadris and/or resistant varieties. Often, infected Rhizoctonia beets will completely decompose and will not make it into the storage piles. However, in the last couple of years it has become more apparent that partially decomposed beets make it into the piles. These beets commonly have intact crowns but the root is partially rotted. A study was conducted to examine the impact Rhizoctonia beets can have on quality if it is processed.

Partially decomposed beets that made it threw the harvester and into the truck were collected. Beets that appeared to be without Rhizoctonia symptoms were also collected from the same truck. These beets were used to make beet quality samples with different numbers of infected beets from zero infected to all 10 beets infected.

Quality was reduced even with as little as one partially diseased beet added to the samples. Partially decomposed beets from Rhizoctonia will reduce sugar percentage, clear juice purity, and recoverable sugar per ton. In our quest for improved quality, Rhizoctonia management is one factor that must not be over looked.

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% - No Infected Beets</td>
<td>271</td>
<td>18.3</td>
<td>94.9</td>
</tr>
<tr>
<td>10% - 1 of 10 Beets Infected</td>
<td>243</td>
<td>17.0</td>
<td>93.5</td>
</tr>
<tr>
<td>20% - 2 of 10 Beets Infected</td>
<td>230</td>
<td>16.6</td>
<td>92.3</td>
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<tr>
<td>40% - 4 of 10 Beets Infected</td>
<td>205</td>
<td>15.6</td>
<td>90.4</td>
</tr>
<tr>
<td>60% - 6 of 10 Beets Infected</td>
<td>164</td>
<td>14.3</td>
<td>85.4</td>
</tr>
<tr>
<td>80% - 8 of 10 Beets Infected</td>
<td>159</td>
<td>13.7</td>
<td>86.3</td>
</tr>
<tr>
<td>100% - 10 of 10 Beets Infected</td>
<td>112</td>
<td>11.6</td>
<td>81.6</td>
</tr>
</tbody>
</table>
2008 PONCHO BETA SEED TREATMENT TRIAL

Cooperator: John Spero  
Location: Saginaw  
Planting Date: 4/18/2008  
Previous Crop: Soybeans  
Soil Type: Loam  
Variety: B-5833R  
Fertilizer: 220 lbs., 10-24-10 + micros  
200 lbs. 45-0-0 + ESN  

Tillage: Fall Plow - Field Cultivator 2x  
Harvest Date: 9/23/2008  
Sample Date: 9/23/2008  
Herbicides: Pyramin at planting - 2x split rate  
Replicated: 5x  
Spacing: 28” Rows, 5” Seed  
Fungicide: Proline (61 DSV)  
Headsline (101 DSV)  
Topsin/Penncozob (121 DSV)  
Headsline (162 DSV)  

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>POPULATIONS 100 Ft. of Row</th>
<th>Insect Feeding (# Plants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PONCHO BETA</td>
<td>8389</td>
<td>33.66</td>
<td>249</td>
<td>16.7</td>
<td>95.8</td>
<td>25 144 152 185</td>
<td>10</td>
</tr>
<tr>
<td>CHECK</td>
<td>8112</td>
<td>32.75</td>
<td>248</td>
<td>16.6</td>
<td>95.7</td>
<td>42 167 167 185</td>
<td>41</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>8251</td>
<td>33.21</td>
<td>249</td>
<td>16.7</td>
<td>95.7</td>
<td>34 155 160 185</td>
<td>26</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>NS 528</td>
<td>NS 2.81</td>
<td>NS 9</td>
<td>NS .5</td>
<td>NS .4</td>
<td>NS 18 NS 29 4</td>
<td>NS 24 6</td>
</tr>
<tr>
<td>C.V. (%)</td>
<td>4</td>
<td>4.81</td>
<td>2</td>
<td>1.6</td>
<td>0.2</td>
<td>36 1 2 9</td>
<td>15</td>
</tr>
</tbody>
</table>

TRIAL RELIABILITY: Excellent

EMERGENCE: Excellent  
RHIZOCTONIA: Low  
QUADRIS APP: No  
CERC. LEAF SPOT: Excellent  
NEMATODES: Very Low  
WEATHER: ----

Comments: Trial was conducted to compare Poncho Beta insecticide seed treatment to industry standard seed treatment with no Poncho Beta. The seed was from the same seed lot. Significantly less insect feeding was observed with Poncho Beta treatment. The feeding counts were done at 31 days after planting. Insect damaged plants were counted if they had any detectable damage and does not indicate the level of damage on a plant. Poncho Beta seemed to have lower amounts of feeding on the plants that had damage compared to the check. Damage was predominantly from flea beetle.

Cooperating Agriculturist: Ron Meyer, Michigan Sugar Company
2008 STARTER FERTILIZER TRIAL

Cooperator: Bean & Beet Farm | Tillage: Fall Plowed - Spring S Tine
Location: Saginaw County | Harvest Date: 10/2/2008
Planting Date: 5/5/2008 | Sample Date: 10/2/2008
Previous Crop: Corn | Herbicides: Microrates
Soil Type: Clay | Replicated: 6x
Spacing: 30” Row, Seed Thinned to 6” | Variety: B-5833R
Fertilizer: See Treatments: | Fungicide: 3 Cercospora Applications
Side-dressed N. on 6/12/08 | Quadris at 4-8 Leaf Stage
Soil Test P - 35 ppm, pH - 7.9

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>ECONOMIC NET RETURN</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>St: 15 Gal. Mix 28% &amp; 10-34 (31# N, 30# P₂O₅)</td>
<td>$821</td>
<td>5571</td>
<td>21.07</td>
<td>264</td>
<td>17.5</td>
<td>96.3</td>
</tr>
<tr>
<td>N: 60# N Side-dressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St: No Starter</td>
<td>$803</td>
<td>5290</td>
<td>20.07</td>
<td>264</td>
<td>17.4</td>
<td>96.3</td>
</tr>
<tr>
<td>N: 87# N PPI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| AVERAGE | 5430 | 20.57 | 264 | 17.4 | 96.3 |
| LSD (5%) | NS 382 | NS 1.56 | NS 3 | NS 0.2 | NS 0.3 |
| C.V. (%) | 5 | 5.11 | 1 | 0.6 | 0.2 |

TRIAL RELIABILITY: Good

EMERGENCE: Excellent | RHIZOCTONIA: Very Low

Comments: Trial was conducted to look at the combination effect of a 2x2 starter fertilizer (31-30-0) and 60 lbs. of side-dress nitrogen compared to a no starter fertilizer program with all the nitrogen (87 lbs/acre) pre plant incorporated. The treatment with 2x2 starter fertilizer visually had better growth than no starter treatment. A trend for higher yield occurred with starter/side-dress nitrogen application. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 264. Cost used for P₂O₅ was $0.40 per pound and $10 was used for sidedress cost.

Cooperating Agriculturist: Tim Boring, Michigan State University
Paul Horny & Dennis Fleischmann, Saginaw Valley Bean & Beet Far
2008 DYNASTY AND CRUISER SEED TREATMENT TRIAL

Cooperator: Bean & Beet Farm  
Variety: HM-7172RZ & HM-2771RZ  
Planting Date: 4/17/2008  
Seed Spacing: 4 Inch  
Replicated: 6x

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>POPULATION - 50 Ft of Row</th>
<th>Insect Damaged Plants 31 Days after Planting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11 Days</td>
<td>13 Days</td>
</tr>
<tr>
<td>HM-7172RZ with Dynasty</td>
<td>83</td>
<td>99</td>
</tr>
<tr>
<td>HM-7172RZ with Dynasty &amp; Cruiser</td>
<td>77</td>
<td>93</td>
</tr>
<tr>
<td>HM-7172RZ Check</td>
<td>79</td>
<td>89</td>
</tr>
<tr>
<td>HM-2771RZ with Dynasty</td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td>HM-2771RZ with Dynasty &amp; Cruiser</td>
<td>77</td>
<td>88</td>
</tr>
<tr>
<td>HM-2771RZ Check</td>
<td>100</td>
<td>109</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>16</td>
<td>NS 17</td>
</tr>
<tr>
<td>C.V. (%)</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

TRIAL RELIABILITY: Poor

Comments: Trial was conducted to evaluate potential seed treatments for sugar beets. Neither product tested is currently cleared for use on sugar beets. Dynasty is a Strobilurin fungicide that may offer protection of seedling diseases such as Rhizoctonia and Pythium. Cruiser is a systemic insecticide that can protect young plants from early season insect feeding such as flea beetles and springtails. Seed from two varieties, HM-7172RZ and HM-2771RZ, were treated with Dynasty and Cruiser alone and in combination. The treatments used seed from the same seed lot. Trial emergence was under dry conditions and had no detectable seedling disease in any of the treatments. Emergence did not seem to be greatly effected, however HM-2771RZ may have been negatively affected. Insect damaged plants were counted if they had any detectable damage. Cruiser treatments did reduce insect feeding from about 35% to about 8% and reduced the amount of feeding on plants. Damage that was detected was mainly from flea beetle.

Cooperating Agriculturist: Paul Horny & Dennis Fleischmann, Saginaw Valley Bean & Beet Farm
Cooperator: John Spero  
Location: Saginaw County  
Planting Date: 4/18/2008  
Previous Crop: Soybeans  
Soil Type: Loam  
Spacings: 28" Rows, 4 15/16" Seed  
Fertilizer: 220 Lbs 10-34-0 w/ Micros, 200 Lbs 45-0-0 w/ 40% ESN  

**TREATMENT RWSA TONS / ACRE RWST % SUGAR % CJP POPULATIONS 100 Ft. of Row**  
<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>7 Day</th>
<th>9 Day</th>
<th>11 Day</th>
<th>19 Day*</th>
<th>31 Day*</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-BEET</td>
<td>7319</td>
<td>31.69</td>
<td>231.0</td>
<td>16.0</td>
<td>94.2</td>
<td>29</td>
<td>131</td>
<td>138</td>
<td>141</td>
<td>156</td>
</tr>
<tr>
<td>CHECK</td>
<td>7172</td>
<td>30.65</td>
<td>234.1</td>
<td>16.2</td>
<td>94.3</td>
<td>4</td>
<td>93</td>
<td>111</td>
<td>148</td>
<td>162</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>7246</td>
<td>31.17</td>
<td>232.6</td>
<td>16.1</td>
<td>94.3</td>
<td>17</td>
<td>112</td>
<td>124</td>
<td>145</td>
<td>159</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>NS 364</td>
<td>NS 1.23</td>
<td>NS 9.6</td>
<td>NS 0.5</td>
<td>NS 0.7</td>
<td>23</td>
<td>NS 42</td>
<td>NS 45</td>
<td>NS 31</td>
<td>NS 18</td>
</tr>
<tr>
<td>LSD (10%)</td>
<td>NS 279</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C.V. (%)</td>
<td>3</td>
<td>2.24</td>
<td>2.3</td>
<td>1.8</td>
<td>0.4</td>
<td>80</td>
<td>21</td>
<td>21</td>
<td>12</td>
<td>7</td>
</tr>
</tbody>
</table>

**TRIAL RELIABILITY: Good**  
**EMERGENCE:** Good  
**RHIZOCTONIA:** Very Low  
**CERC. LEAF SPOT:** Excellent Control  
**QUADRIS APP:** None

Comments: Trial was planted and emerged under good soil moisture conditions. The variety was SX 1233. Seed was X-BEET primed by GTG and compared to non primed seed from the same seed lot. X-BEET primed seed emerged significantly faster than non primed seed. On day twelve a frost/freeze occurred that reduced stand counts. X-BEET treatments may have been reduced more since more beets were emerged at the time of the frost/freeze. Final stands were not significantly different. There was no significant difference in beet quality between the treatments. Tonnages of each of the five replications of X-BEET were higher than non primed seed. This difference was significant at the 90% confidence level.

Cooperating Agriculturist: Ron Meyer, Michigan Sugar Company
2008 STARTER FERTILIZER TRIAL

Cooperator: Bean & Beet Farm
Tillage: Fall Plowed - Spring S Tine
Location: Saginaw County
Harvest Date: 10/2/2008
Planting Date: 5/5/2008
Sample Date: 10/2/2008
Previous Crop: Corn
Herbicides: Microrates
Soil Type: Clay
Replicated: 6x
Spacing: 30" Row, Seed Thinned to 6"
Variety: B-5833R
Fertilizer: See Treatments:
Fungicide: 3 Cercospora Applications
Side-dressed N. on 6/12/08
Soil Test P - 35 ppm, pH - 7.9
Quadris at 4-8 Leaf Stage

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>ECONOMIC NET RETURN</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>St: 7.5 Gal. of 10-34-0 (9# N, 30# P2O5) N: 57# N PPI &amp; 22.5# N Side-dressed</td>
<td>$981</td>
<td>6621</td>
<td>24.69</td>
<td>268</td>
<td>17.7</td>
<td>96.4</td>
</tr>
<tr>
<td>St: 15 Gal. Mix 28% &amp; 10-34 (31# N, 30# P2O5) N: 57# N PPI</td>
<td>$922</td>
<td>6170</td>
<td>23.61</td>
<td>261</td>
<td>17.5</td>
<td>95.7</td>
</tr>
<tr>
<td>St: No Starter N: 57# N PPI &amp; 30# N Side-dressed</td>
<td>$891</td>
<td>5959</td>
<td>22.53</td>
<td>264</td>
<td>17.6</td>
<td>96.0</td>
</tr>
<tr>
<td>St: 10 Gal. of 28% (30# N) N: 57# N PPI</td>
<td>$862</td>
<td>5693</td>
<td>21.79</td>
<td>261</td>
<td>17.4</td>
<td>95.9</td>
</tr>
</tbody>
</table>

LSD (5%) 486 1.95 NS 8 NS 0.3 NS 0.7
C.V. (%) 7 6.85 2 1.6 0.6

TRIAL RELIABILITY: Good
EMERGENCE: Excellent
Rhizoctonia: Very Low

Comments: Trial was conducted to look at the effect of starter 2x2 fertilizer and nitrogen placement/timing on early season growth and yield of sugarbeets. Soil test indicated that phosphorous levels are in the optimum range. Starter fertilizers containing 30 lbs of phosphorous in combination with nitrogen showed a visual early season growth response and yielded well. Side-dress nitrogen application seemed to have a positive influence on yield. Pre-plant application of nitrogen (4/17/08) was applied 2 1/2 weeks prior to planting (5/5/08) and was worked into the soil. Dry conditions occurred after the application which may have caused some nitrogen loss. Total nitrogen rate for each treatment was approximately 87 lbs/acre. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 264. Cost used for P2O5 was $0.40 per pound and $10 was used for sidedress cost.

Cooperating Agriculturist: Tim Boring, Michigan State University
Paul Horny & Dennis Fleischmann, Saginaw Valley Bean & Beet Farm
2008 STARTER FERTILIZER TRIAL

Cooperator: Sylvester Farms & MSC
Location: Bay County
Planting Date: 5/5/2008
Previous Crop: Corn
Soil Type: Clay
Spacing: 30" Row, Seed Thinned to 6"
Fertilizer: See Treatments:
          Side-dressed N. on 6/12/08
          Soil Test P - 82 ppm, pH - 7.7

Tillage:  
Harvest Date: 10/23/2008
Sample Date: 10/23/2008
Herbicides: Split Rates
Replicated: 6x
Variety: B-5833R
Fungicide: 3 Cercospora Applications
          Quadris at 4-8 Leaf Stage

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>ECONOMIC NET RETURN</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>St: 15 Gal. Mix 28% &amp; 10-34 (31# N, 30# P2O5)</td>
<td>$1,402</td>
<td>10298</td>
<td>35.35</td>
<td>291</td>
<td>19.1</td>
<td>96.2</td>
</tr>
<tr>
<td>N: 57# N PPI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St: 7.5 Gal. of 10-34-0 (9# N, 30# P2O5)</td>
<td>$1,385</td>
<td>10241</td>
<td>35.41</td>
<td>289</td>
<td>19.1</td>
<td>96.0</td>
</tr>
<tr>
<td>N: 57# N PPI &amp; 22.5# N Sidedressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St: No Starter</td>
<td>$1,394</td>
<td>10199</td>
<td>34.99</td>
<td>292</td>
<td>19.2</td>
<td>96.2</td>
</tr>
<tr>
<td>N: 57# N PPI &amp; 30# N Sidedressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St: 10 Gal. of 28% (30# N)</td>
<td>$1,388</td>
<td>10072</td>
<td>34.71</td>
<td>291</td>
<td>19.1</td>
<td>96.3</td>
</tr>
<tr>
<td>N: 57# N PPI</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>NS 794</td>
<td>NS 2.95</td>
<td>NS 6</td>
<td>NS 0.3</td>
<td>NS 0.5</td>
<td></td>
</tr>
<tr>
<td>C.V. (%)</td>
<td>6</td>
<td>6.83</td>
<td>2</td>
<td>1.3</td>
<td>0.4</td>
<td></td>
</tr>
</tbody>
</table>

TRIAL RELIABILITY: Fair

EMERGENCE: Excellent
RHIZOCTONIA: Low

Comments: Trail was conducted to look at the effect of starter 2x2 fertilizer and nitrogen placement/timing on early season growth and yield of sugar beets. Soil test phosphorous levels are very high. Starter fertilizers containing 30 lbs of phosphorous in combination with nitrogen showed a slight visual early season growth response. Pre-plant application of nitrogen (4/23/08) was applied 2 weeks prior to planting (5/5/08) and worked into the soil. Total nitrogen rate for each treatment was approximately 87 lbs/acre. No significant yield differences occurred between treatments. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 291. Cost used for P2O5 was $0.40 per pound and $10 was used for sidedress cost.

Cooperating Agriculturist: Tim Boring, Michigan State University
Research Group at Michigan Sugar Company
Cooperator: Allen Bischer  
Location: Harbor Beach, Huron County  
Planting Date: 4/22/2008  
Previous Crop: Corn  
Spacing: 30", 4.25" Seed  
Fertilizer: Starter: 15-24-7 w/ 4% S, 1% Ca, .6% Mg, 1% Mn, 0.25% B, 87 Lbs of N by Urea Broadcast

Tillage: Fall Chisel - Field Cultivator 1x  
Harvest Date: 10/3/2008  
Sample Date: 9/22/2008  
Herbicides: Microrates 4x, Outlook  
Replicated: 5x  
Variety: B-1643 N  
Fungicide: Proline (52 DSV)  
Headline (113 DSV)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter w/ Avail</td>
<td>6866</td>
<td>27.13</td>
<td>253</td>
<td>17.3</td>
<td>94.7</td>
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<tr>
<td>Starter</td>
<td>6693</td>
<td>26.51</td>
<td>253</td>
<td>17.3</td>
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<td><strong>AVERAGE</strong></td>
<td>6779</td>
<td>26.82</td>
<td>253</td>
<td>17.3</td>
<td>94.6</td>
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<tr>
<td>LSD (5%)</td>
<td>NS 725</td>
<td>NS 2.33</td>
<td>NS 9</td>
<td>NS 0.5</td>
<td>NS 0.5</td>
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<tr>
<td>C.V. (%)</td>
<td>6</td>
<td>4.94</td>
<td>2</td>
<td>1.6</td>
<td>0.3</td>
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</table>

**TRIAL RELIABILITY:** Good

| EMERGENCE: | Good | CERC. LEAF SPOT: | Very Good Control |
| RHIZoctonia: | Moderate | NEMATODES: | Not Detected |
| QUADRIS APP: | No | WEATHER: | --- |

Comments: Trial was established to look at the effect of Avail when added to dry starter fertilizer compared to the same starter with no Avail. Avail is a product that claims to inhibit fixation of phosphorous fertilizer allowing improved plant uptake of phosphorous. This trial did not show any visible or measurable effect on yield when Avail was added to the 2x2 starter fertilizer. Soil test indicated that phosphorous levels were high (52 ppm) and soil pH was 6.9. Mixing Avail with dry starter fertilizer caused some fertilizer build up on the planter.

**Cooperating Agriculturist:** Dennis Bischer, Thumb Farm Service  
Matt Booms, Michigan Sugar Company
2008 STARTER FERTILIZER AND AVAIL TRIAL

Cooperator: Houghtaling Farms
Location: Sandusky, Sanilac County
Planting Date: 4/27/2008
Previous Crop: Corn
Soil Type: Loam
Spacing: 28" Row, 4" Seed
Fertilizer: Starter: 8 Gal. of 10-34-0 w/ 1 pint Boron, 75 Lbs of N by 28% PPI

Tillage: Fall Chisel - Field Cultivator 1x
Harvest Date: 11/1/2008
Sample Date: 10/8/2008
Herbicides: Roundup 3x
Replicated: 4x
Variety: Mix of HM 27-28-29 RR
Fungicide: Proline (97 DSV)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
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<tbody>
<tr>
<td>Starter w/ Avail</td>
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<td>30.16</td>
<td>264</td>
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<tr>
<td>Starter</td>
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<td>29.73</td>
<td>262</td>
<td>17.8</td>
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<tr>
<td>Check</td>
<td>7090</td>
<td>27.71</td>
<td>256</td>
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<tr>
<td>AVERAGE</td>
<td>7615</td>
<td>29.20</td>
<td>261</td>
<td>17.6</td>
<td>95.3</td>
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<td>LSD (10%)</td>
<td>603</td>
<td>2.07</td>
<td>8</td>
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<td>C.V. (%)</td>
<td>6</td>
<td>5.16</td>
<td>2</td>
<td>1.1</td>
<td>0.5</td>
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</table>

TRIAL RELIABILITY: Good

EMERGENCE: Good
RHIZOCTONIA: Low
QUADRIS APP: None

CERC. LEAF SPOT: Fair Control
NEMATODES: Not Detected
WEATHER: None

Comments: Trial was established to look at the effect of standard starter fertilizer, no starter fertilizer and Avail added to starter fertilizer. Avail is a product that claims to inhibit fixation of phosphate fertilizer allowing improved plant absorption of phosphorus and potentially increasing yield. Twelve row strips were replicated across the field utilizing a standard starter fertilizer tank (10-34-0 plus boron) and a second tank that contained the same mix with the addition of Avail. Soil test indicated high phosphorus levels (60 ppm) and a 7.1 pH. Strips that had a 2x2 starter fertilizer had visibly better growth early in the season. Strips with starter fertilizer yielded better than non starter strips. The addition of Avail to the starter did not significantly enhance yield.

Cooperating Agriculturist: David Ganton, Michigan Sugar Company
Eric Sherwood, Star of the West
2008 FOLIAR MICRONUTRIENT TRIAL

Cooperator: Loren & Josh Humm  
Location: Ithaca, Gratiot County  
Planting Date: 4/26/2008  
Previous Crop: Corn  
Soil Type: Loam  
Spacing: 28"  
Fertilizer: Starter: 10 gal. 22-11-0; 104 lbs. N, Urea/ESN

Tillage: Fall Chisel - Field Cultivator 2x  
Harvest Date: 10/31/2008  
Sample Date: 10/13/2008  
Herbicides: Roundup 3x  
Replicated: 4x  
Variety: 4"  
Fungicide: Eminent (98 DSV) Kocide 3000 (129 DSV)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>6744</td>
<td>24.52</td>
<td>275</td>
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<td>94.8</td>
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<tr>
<td>Boron &amp; Manganese</td>
<td>6727</td>
<td>24.41</td>
<td>275</td>
<td>18.7</td>
<td>94.7</td>
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<tr>
<td>Boron</td>
<td>6712</td>
<td>24.27</td>
<td>277</td>
<td>18.7</td>
<td>95.0</td>
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<tr>
<td>Manganese</td>
<td>6516</td>
<td>23.99</td>
<td>272</td>
<td>18.6</td>
<td>94.5</td>
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<td>AVERAGE</td>
<td>6674</td>
<td>24.30</td>
<td>275</td>
<td>18.6</td>
<td>94.7</td>
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<tr>
<td>LSD (5%)</td>
<td>NS 1021</td>
<td>NS 3.6</td>
<td>NS 5.3</td>
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<td>NS 0.5</td>
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<tr>
<td>C.V. (%)</td>
<td>10</td>
<td>9.27</td>
<td>1</td>
<td>0.9</td>
<td>0.3</td>
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</table>

TRIAL RELIABILITY: Fair

EMERGENCE: Fair - 27,000 Plants /Acre  
CERC. LEAF SPOT: Good Control
RHIZOCTONIA: Very Low  
NEMATODES: None Detected
QUADRIS APP: Yes, 8-12 Leaf  
WEATHER: Dry Season

Comments: Trial was conducted to see if there is a crop response to foliar applied micronutrients (Boron and Manganese). Soil test indicated an adequate supply of micronutrients available and did not recommend additional application. The soil pH was 6.6. The grower did not apply any micronutrients in the starter fertilizer. Applications of Tracite liquid Boron and Ele-Max liquid flowable manganese was applied at the 8-10 leaf stage at 2 quarts and 1 pint rates, respectively. The two products were also applied in combination. No visual or yield response was detected between any treatments. No foliar injury was detected.

Cooperating Agriculturist: Wayne Davis, Michigan Sugar Company
2008 FOLIAR BORON TRIAL

Cooperator: Warren Braun
Location: Harbor Beach, Huron County
Planting Date: 4/21/2008
Previous Crop: Wheat - Oats Cover Crop
Soil Type: Sandy Loam
Spacing: 28" Row, 4.1" Seed
Fertilizer: 90 Lbs 11.4-21-7 w/ 8.4 S, 0.3 B, 0.9 Mg, 0.9 Mn; 100 Lbs 46-0-0, 7000 Gal. of Liquid Manure

Tillage: V Ripper & Field Cult. Fall - Planted in Oat Cover Crop Stubble
Harvest Date: 10/29/2008
Sample Date: 10/8/2008
Herbicides: Roundup 3x
Replicated: 4x
Variety: HM-28RR
Fungicide: Headline (1st) Eminent (2nd)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
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<tbody>
<tr>
<td>Check</td>
<td>6561</td>
<td>25.86</td>
<td>255</td>
<td>17.2</td>
<td>95.3</td>
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<tr>
<td>Foliar Boron</td>
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<td>17.2</td>
<td>94.9</td>
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<td>AVERAGE</td>
<td>6492</td>
<td>25.68</td>
<td>254</td>
<td>17.2</td>
<td>95.1</td>
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<td>LSD (5%)</td>
<td>NS 1997</td>
<td>NS 7.66</td>
<td>NS 4</td>
<td>NS 0.4</td>
<td>NS 1.5</td>
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<td>C.V. (%)</td>
<td>14</td>
<td>13.26</td>
<td>1</td>
<td>1.0</td>
<td>0.7</td>
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</table>

TRIAL RELIABILITY: Poor
EMERGENCE: Good
RHIZOCTONIA: Low
QUADRIS APP: None
CERC. LEAF SPOT: Good Control
NEMATODES: Not Detected
WEATHER: ---

Comments: Field was identified as showing Boron deficiency. Tracite liquid Boron was foliar applied at 3 quarts per acre on June 11th. Field was relatively dry when symptoms occurred. All boron foliar symptoms disappeared in both check and treated strips after rainfall and Boron application. Check and Boron applied strips yielded the same.

Cooperating Agriculturist: Matt Booms, Michigan Sugar Company
2008 NFUSION NITROGEN TRIAL

Cooperator: Clay Crumbaugh  
Tillage: Fall Chisel, Fall Field Cult. 1x., Stale Seedbed  
Location: Breckenridge, Gratiot County  
Harvest Date: 11/4/2008  
Planting Date: 4/17/2008  
Sample Date: 10/13/2008  
Previous Crop: Soybeans  
Herbicides: Micro-rates 5x  
Soil Type: Loam  
Replicated: Beta B-5833R  
Spacing: 30"  
Variety: Eminent (58 DSV)  
Fertilizer: Starter: 216 Lbs of 12-12-12 w/ 1 Mn & 0.5 B, Nitrogen varied as part of trial.

Fungicide: Headline (115 DSV)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>30 DAY POP. 100 Ft. of Row</th>
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<tbody>
<tr>
<td>Conventional N - 85 Lbs Total N Rate</td>
<td>8600</td>
<td>30.65</td>
<td>280</td>
<td>18.4</td>
<td>96.5</td>
<td>244</td>
</tr>
<tr>
<td>80-20 Ratio of Conv N &amp; Nfusion - 68 Lbs Total N Rate</td>
<td>8225</td>
<td>29.03</td>
<td>283</td>
<td>18.7</td>
<td>96.2</td>
<td>248</td>
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<tr>
<td>Conventional N - 68 Lbs Total N Rate</td>
<td>7928</td>
<td>28.89</td>
<td>275</td>
<td>18.2</td>
<td>96.0</td>
<td>244</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>8251</td>
<td>29.52</td>
<td>279</td>
<td>18.4</td>
<td>96.2</td>
<td>245</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>NS 830</td>
<td>1.51</td>
<td>NS 19</td>
<td>NS 1.2</td>
<td>0.2</td>
<td>NS 20</td>
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<tr>
<td>C.V. (%)</td>
<td>2</td>
<td>1.19</td>
<td>2</td>
<td>1.6</td>
<td>0.1</td>
<td>2</td>
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</table>

TRIAL RELIABILITY: Excellent

EMERGENCE: Excellent  
CERC. LEAF SPOT: Very Good Control  
RHIZOTONIA: Very Low  
NEMATODES: Not Detected  
QUADRIS APP: Quadris, 2-8 Leaf Stage  
WEATHER: ---

Comments: Trial was conducted to evaluate the effect that NFUSION may have on sugar beet yield and quality. NFUSION is a slow release nitrogen product distributed by Wilber-Ellis. This product was added to 28% liquid nitrogen in this trial at a rate of 20% of the total nitrogen. Because of the assumed increase in efficiency from the slow release and added cost of NFUSION, normal rates were reduced from the typical 85 lbs of nitrogen per acre to 68 lbs. A comparison was also made at the rate of 68 lbs with no NFUSION added. Yield and quality differences between the two low nitrogen rate treatments were non significant. The normal conventional treatment of 85 lbs. of nitrogen trended better in RWSA and tons. Growing conditions where relatively dry compared to other production areas.

Cooperating Agriculturist: Dave Bailey, Michigan Sugar Company
Trial was conducted to look at effective and efficient ways to supply early season nitrogen to young sugar beet plants. Past experience has indicated that 2x2 banding of nitrogen and other nutrients often stimulates early season growth and yield. Research was conducted on applying a ten inch band of nitrogen over the row shortly after planting. Different rates were applied and emergence counts were taken. The night after the nitrogen application, approximately ¼ inch of rainfall occurred. No significant effect on emergence occurred at 8 gallons per acre of 28% nitrogen in a ten inch band. Rates of 16, 24, and 32 gallons did affect emergence. Overall emergence would be considered poor. Further evaluation will be conducted in 2009.
2008 NARROW ROW TRIAL

Cooperator: Brian Rayl & Bernia Family Farm  
Location: Akron, Tuscola County  
Planting Date: 4/18/2008  
Previous Crop: Wheat  
Soil Type: Loam  
Row Spacing: 30/22 inch  
Fertilizer: 2x2 Starter = 5 gal. 10-34-0 + 13 gal. 28% + 3 gal. Thiosol; 85 lbs. N Broadcast

Tillage: Disk Ripper - Field Cultivator 1x  
Harvest Date: 11/5/2008  
Sample Date: 11/5/2008  
Herbicides: Roundup 3x  
Replicated: 3x  
Seed Spacing: 4.25"  
Variety: HM 28 RR  
Fungicide: Proline 54 DSV  

<table>
<thead>
<tr>
<th>ROW SPACING</th>
<th>ECONOMIC NET RETURN</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
<th>POPULATION 100 Ft. of Row</th>
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</thead>
<tbody>
<tr>
<td>22 inch</td>
<td>$1,526</td>
<td>13266</td>
<td>42.09</td>
<td>315</td>
<td>20.3</td>
<td>97.1</td>
<td>213</td>
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<tr>
<td>30 inch</td>
<td>$1,416</td>
<td>12039</td>
<td>38.96</td>
<td>309</td>
<td>20.1</td>
<td>96.5</td>
<td>195</td>
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<td>LSD (10%)</td>
<td>1052</td>
<td>3.2</td>
<td>3.6</td>
<td>0.37 (NS)</td>
<td>0.5</td>
<td>43 (NS)</td>
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<tr>
<td>C.V. (%)</td>
<td>3.5</td>
<td>3.3</td>
<td>0.5</td>
<td>0.8</td>
<td>0.2</td>
<td>9</td>
<td></td>
</tr>
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</table>

TRIAL RELIABILITY: Excellent

EMERGENCE: Very good  
RHIZOCTONIA: Very little  
QUADRIS APP: 2-8 leaf  
CERC. LEAF SPOT: Good  
NEMATODES: Not detected  
WEATHER: ----

Comments: Trial was conducted by coordinating the planting and harvesting efforts of Rayl Farms and Bernia Family Farms in one location to compare 30 inch to 22 inch rows for yield and quality. Seed spacing was planted at 4.25" spacing. Final stands of 22" rows equaled 50,000 plants per acre and 30" rows are 34,000. Fertility and other management practices were kept the same between row widths. Significant differences appear for better quality and RWSA with the narrow rows under a high yielding environment. Truck weights were used for harvest with tare deducted. Revenue per acre is based on a $40 per ton projected payment and an "average RWST" equal to the trial average of 312. Seed cost were calculated using $211 per unit. Quadris cost were $23.90 for 30" rows and $32.55 for 22" rows.

Cooperating Agriculturist: Jeff Karst, Michigan Sugar Company
2008 QUALITY MANAGEMENT TRIAL

Cooperator: Clay Crumbaugh
Location: Breckenridge, Gratiot County
Planting Date: 4/22/2008
Previous Crop: Soybeans
Soil Type: Loam
Spacing: 30"
Fertilizer: Starter: 216 Lbs of 12-12-12 w/ 1 Mn & 0.5 B, Nitrogen varied as part of trial.

TREATMENT | RWSA | TONS / ACRE | RWST | % SUGAR | % CJP | HARV. POP. 100 Ft. of Row
---|---|---|---|---|---|---
High Level Management | 7666 | 25.68 | 298 | 19.8 | 95.7 | 120
Typical Management | 7514 | 26.02 | 289 | 19.3 | 95.3 | 108

LSD (5%) | NS 1378 | NS 2.89 | NS 22 | NS 1.2 | NS 0.7 | 6
C.V. (%) | 5 | 3.18 | 2 | 1.7 | 0.2 | 1

TRIAL RELIABILITY: Fair

EMERGENCE: Poor
RHIZOCTONIA: Moderate
QUADRIS APP: Yes on High Level, No on Typical
CERC. LEAF SPOT: Good Control
NEMATODES: Not Detected
WEATHER: ---

Comments: Trial was conducted to compare “typical grower management practices” to what would be considered "high quality" management practices. Trial consisted of 3- 90 foot blocks of each treatment. All treatments had the same starter fertilizer. Quality samples where taken off the beet piler. Truck scale weights were used to exclude tare. Typical management practices are as follows: 110 lbs of nitrogen per acre, 4.5 inch seed spacing, no Quadris, poor topping that left some green tissue on the crown and two leaf spot sprays. High level management practices are as follows: 85 lbs of total nitrogen per acre, 3 7/8 inch seed spacing, Quadris at the 4 leaf stage, excellent topping, and two leaf spot sprays. Emergence in the trial was poor because of seed issues. Harvest populations were well below the ideal of 180 to 200 beets per 100 foot of row. Yields from both treatments were not significantly different. Quality indicators (RWST, % sugar, and CJP) trended higher in the high management treatment. Crystal R-509 was utilized because of field history of Rhizoctonia.

Cooperating Agriculturist: Dave Bailey, Michigan Sugar Company
2008 CERCOSPORA LEAF SPOT TRIAL

Cooperator: Randy Sturm
Location: Pigeon, Huron County
Planting Date: 4/22/2008
Previous Crop: Wheat
Soil Type: Clay Loam
Spacing: 28"
Fertilizer: 479# 5-16-34+Micros Broadcast; 22 gal. 28%+ Thio-Sol Broadcast; 20 gal. 28% Sidedress

Tillage: Fall Chisel - Field Cultivator 2x
Harvest Date: 10/17/2008
Sample Date: 9/22/2008
Herbicides: Roundup 2x
Replicated: 4x
Variety: 4"
Fungicide: Proline 68 (DSV) Headline 142 (DSV) 8/30/08

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>RWSA</th>
<th>TONS / ACRE</th>
<th>RWST</th>
<th>% SUGAR</th>
<th>% CJP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Spray</td>
<td>8027</td>
<td>31.29</td>
<td>257</td>
<td>17.6</td>
<td>94.4</td>
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<tr>
<td>2 Spray</td>
<td>8045</td>
<td>32.19</td>
<td>250</td>
<td>17.2</td>
<td>94.5</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>8036</td>
<td>31.74</td>
<td>253</td>
<td>17.4</td>
<td>94.4</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>NS 1074</td>
<td>NS 4.04</td>
<td>NS 22</td>
<td>NS 1.3</td>
<td>NS 0.9</td>
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<tr>
<td>C.V. (%)</td>
<td>4</td>
<td>3.63</td>
<td>2</td>
<td>2.1</td>
<td>0.3</td>
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</tbody>
</table>

TRIAL RELIABILITY: Good

EMERGENCE: Excellent - 34,000 Population
RHIZOCTONIA: Low
QUADRIS APP: None
CERC. LEAF SPOT: Good
NEMATODES: Not Detected
WEATHER: ---

Comments: Trial was conducted to compare a single leaf spot application to a two application system. Leaf spot pressure was low. Quality samples were taken only three weeks after second application because of expected early harvest. At that time very little leaf spot was seen between either treatments. At harvest on 10/17/08 leaf spot pressure was considerably higher in the single spray treatment than the two spray treatment. No significant differences measured between any treatments.

Cooperating Agriculturist: Roger Elston, Michigan Sugar Company
Economic pressures have led to shorter rotations with more frequent planting of sugar beets. Intense tillage and trafficking has damaged soil structure, and many beet growers have seen yields stagnate or decline. Specific causes are often difficult to identify and may arise from multiple sources including diseases, insects and nematodes. Managing cropping systems with the goal of improving soil quality can improve stand establishment and crop growth, improve water infiltration, drainage and aeration, maintain a balance of pests and pathogens, and create a low-stress environment for the crop. The goal of this project is to develop an approach to soil quality management designed to reclaim the natural productivity of currently unproductive beet ground. Key objectives include a reduction in tillage intensity when practical; the use of biosuppressive cover crops for disease, insect and nematode control; and the use of livestock manure as an organic input to enhance microbial activity and add soil carbon and structure.

Oil seed radish (var. Colonel, 20 lb/ac) and oriental mustard (var. Pacific Gold, 12 lb/ac) were sown in untilled wheat stubble on a sandy clay loam on 8 August 2006 and 8 August 2007 at the Lakke-Ewald farm in Unionville. Oil seed radish is suppressive of sugar beet cyst nematode, and oriental mustard has been shown to be suppressive of soil borne fungal diseases. Two seeding methods were used: 1) direct-drilling with a Deere 750 no-till drill (15 ft width, 7.5 inch spacing), and 2) slurry seeding with aeration tillage with seed-laden dairy manure (10° gang angle, 10,000 gal/ac). The plots (2000 ft x 15 ft in 2006, 1000 ft by 15 ft in 2007) were arranged in a randomized complete block with four replications. Cover crop biomass and plant population (plants yd⁻²) were measured in November of each year prior to tillage incorporation.

The slurry-seeded plant population was 40% to 50% of the direct-drilled stand, but the biomass yield of the slurry-seeded crop was equal to or greater than the direct-drilled crop (table 1). The slurry-seeded plants effectively scavenged the manure nitrogen and grew vigorously. Individual slurry-seeded plants were two to six time larger than drilled plants.

The 2008 sugar beet crop was planted on April 19 in 22-inch rows. The field had a history of poor sugar beet yields—sugar beet cyst nematode (SBCN) was suspected but not confirmed as the likely cause. The field was split east-to-west with a nematode resistant variety, B-5534N planted on the east-half and a susceptible variety, B-5833R on the west-half. Thirty-day plant stands were excellent, 214 plants per 100 ft-row on the east-half and 194 plants on the west half (table 1). All plots were sampled in two transects (one east and one west) for plant available nitrogen (PSNT) and sugar beet cyst nematode on May 31. Based on the results of the pre-sidedress nitrate test (PSNT) there was little difference in plant available nitrate nitrogen between the manured and non-manured plots. Presumably, the nitrate N was lost through ammonia volatilization, leaching, or incorporated in microbial and plant biomass. Sugar beet cyst nematode was detectable—the greatest numbers followed the oriental mustard cover crops. The least SBCN followed the oil seed radish cover crop.

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1 The authors are T.M. Harrigan, Biosystems and Agricultural Engineering, Michigan State University; S. Poindexter, Regional Sugar Beet Specialist, MSUE, and D.R. Mutch, Kellogg Biological Station, Michigan State University. December 20, 2008.
Table 1. Fall 2007 cover crop biomass, spring 2008 sugar beet crop nematode population and nitrogen credit based on PSNT.

<table>
<thead>
<tr>
<th>Seeding Method</th>
<th>Biomass ton/acre</th>
<th>Plants ft²</th>
<th>30-day stand</th>
<th>Rhizoc Biomass ton/acre</th>
<th>Plants ft²</th>
<th>30-day Stand</th>
<th>PSNT lb N</th>
<th>SBCN nematode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check, no cover, no tillage</td>
<td>0.84 d</td>
<td>---</td>
<td>221 a 6 a</td>
<td>0.79 c</td>
<td>---</td>
<td>189 a 13 a</td>
<td>62 ab</td>
<td>203 abc</td>
</tr>
<tr>
<td>No cover crop, manure</td>
<td>0.92 d</td>
<td>---</td>
<td>216 a 3 a</td>
<td>0.68 c</td>
<td>---</td>
<td>187 a 4 a</td>
<td>86 ab</td>
<td>198 abc</td>
</tr>
<tr>
<td>Oil seed radish, slurry seed</td>
<td>2.08 ab</td>
<td>5.1 b</td>
<td>208 a 1 a</td>
<td>2.60 a</td>
<td>4.6 b</td>
<td>198 a 2 a</td>
<td>91 ab</td>
<td>50 a</td>
</tr>
<tr>
<td>Oil seed radish, direct drill</td>
<td>2.38 a</td>
<td>8.8 b</td>
<td>207 a 0 a</td>
<td>2.49 a</td>
<td>9.9 b</td>
<td>201 a 1 a</td>
<td>95 a</td>
<td>100 ab</td>
</tr>
<tr>
<td>Oriental mustard, slurry seed</td>
<td>2.12 a</td>
<td>8.6 b</td>
<td>211 a 2 a</td>
<td>2.36 a</td>
<td>7.4 b</td>
<td>192 a 1 a</td>
<td>58 b</td>
<td>2745 bc</td>
</tr>
<tr>
<td>Oriental mustard, direct drill</td>
<td>1.55 c</td>
<td>20.6 a</td>
<td>220 a 5 a</td>
<td>1.87 b</td>
<td>17.7 a</td>
<td>198 a 13 a</td>
<td>79 ab</td>
<td>5098 c</td>
</tr>
</tbody>
</table>

*abc letters within the same column represent significant differences (p ≤ 0.10) by Tukey’s HSD procedure.  
SBCN mean separation by Friedman’s median aligned test (p ≤ 0.10).  Risk ratings based on SBCN eggs plus J2’s: no risk = 0; low = 1-1000; moderate = 1001-10,000; high = >10,000.

The beets were harvested on September 23 in the first days of the harvest campaign.  
Although the field was rated as low to moderate risk based on the results of nematode count, the average yield of the resistant variety was 11.6 t/ac and 3457 lb recoverable sugar greater than the susceptible variety (Table 2).  The sugar content of the resistant variety averaged 1.8 percentage points greater than the susceptible variety.  The greatest yields for each variety followed oil seed radish, or oriental mustard combined with manure.  There was no difference in clear juice purity between treatments or varieties.

Table 2. Sugar beet harvest data, 2008.

<table>
<thead>
<tr>
<th>Seeding Method</th>
<th>East Field 2008, B-5534N *</th>
<th>West Field 2008, B-5833R</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ton/acre  CJP, %  % Sugar  RWST</td>
<td>ton/acre  CJP, %  % Sugar RWST</td>
</tr>
<tr>
<td>Check, no cover, no tillage</td>
<td>26.1 c    93.3 a    16.7 b 251 b</td>
<td>6551 c  13.8 c  96.0 a  14.7 c 218 b</td>
</tr>
<tr>
<td>No cover crop, manure</td>
<td>27.3 bc   96.3 a    17.1 ab 255 b</td>
<td>6956 bc  14.0 bc  96.2 a  14.9 c 225 b</td>
</tr>
<tr>
<td>Oil seed radish, slurry seed</td>
<td>28.9 ab   96.2 a    17.3 ab 267 a</td>
<td>7726 a  17.3 ab  95.6 a  15.7 ab 239 a</td>
</tr>
<tr>
<td>Oil seed radish, direct drill</td>
<td>29.2 a    96.3 a    17.4 a 263 a</td>
<td>7675 ab  20.6 a  95.9 a  16.1 a 237 a</td>
</tr>
<tr>
<td>Oriental mustard, slurry seed</td>
<td>29.1 ab   96.2 a    17.5 a 263 a</td>
<td>7646 ab  17.6 a  96.0 a  15.9 a 240 a</td>
</tr>
<tr>
<td>Oriental mustard, direct drill</td>
<td>26.4 bc   96.4 a    17.1 ab 256 b</td>
<td>6759 c  14.0 bc  96.5 a  15.1 bc 226 b</td>
</tr>
</tbody>
</table>

* abc letters within the same column represent significant differences by Tukey’s HSD procedure (p ≤ 0.10).

Based on the 2008 sugar beet harvest at the Ewald farm in Unionville:

- Slurry seeded plant populations were 40 to 50% of the direct drilled crops, but total biomass production was equal to or greater than direct drilling.
- Manure N was presumably lost to volatilization, leaching, or incorporated in microbial or plant biomass and not detectable with the PSNT.  There was no difference in nitrate N due to manure application.
- The nematode resistant variety averaged 11.6 tons/ac beet yield, 26 lbs RWST and 3457 lbs greater RWSA than the susceptible variety.
- The greatest beet and sugar yields for each variety followed oil seed radish, or oriental mustard when combined with manure.
- Although high SBCN counts at side-dress time followed oriental mustard, there was no corresponding drop in sugar production when the cover crop was combined with manure.
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