

# PIONEER NEWSBEET

*Spring 2005*

YOUR

# GROWING

PARTNERS





*By Mark Flegenheimer,  
President and CEO*

We have recently concluded our annual meeting for this year and it was great to have increased attendance and discussion. The integration of Monitor and Michigan Sugar, difficult beet storage conditions, and a weak beet payment are clearly shareholders' and management's major concerns.

The merger is moving ahead smoothly and significant synergies have already been realized. Plans are in place to capture more savings in the future. It will take an enormous effort this summer to convert numerous computer systems to common platforms. I am confident our talented and dedicated employees will get the job done.


The beet storage situation is extremely disappointing and frustrating. A number of factors contributed to this situation which must not be repeated in the future. Capital dollars have been allocated to expand pile grounds and relocate piling equipment to reduce pile heights. In addition, early delivery of beets must be more aggressively pursued. This year, unfortunately, is a stark reminder that we are dealing with a perishable commodity and Mother Nature can be unpredictable during harvest and storage of our crop.

The projected return to growers this year in the form of a beet payment is something the board and management have been concerned about for some time. Increasing energy costs, depressed sugar pricing, and a large carryover inventory have created a difficult environment in which to operate. Michigan is not the only sugar area in the country facing this dilemma. Recently, two mills in Louisiana and one in Florida announced that they are ceasing operations and Amalgamated Sugar Company has stated it will not process sugarbeets at its Eastern Oregon plant this year.

We have been proactive in combating this squeeze on our payment:

- The Monitor/Michigan merger allows us to spread costs over greater production
- Capital expenditures are focused on energy
- Generic sugar advertising to increase consumption
- Restructured benefit plans

These are just a few of the actions we have taken. No one single action, however, is going to fix the problem of a low beet payment, but the many steps we are taking will, with time, provide a decent return to our grower-owners.

As always, if you have a concern or suggestion, don't hesitate to call me (989-799-7300) or send an email ([Mark.Flegenheimer@MichiganSugar.com](mailto:Mark.Flegenheimer@MichiganSugar.com)). 

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## ABOUT THE COVER

Sugarbeet field at Rayl Farms near Akron, Michigan.



# 2004 CROP UPDATE



*by Robert Braem,  
Vice President of Agriculture*

The 2004 crop came in significantly better than expected and broke both yield and sugar content records.

Unfortunately, the beets did not store well and a large tonnage had to be disposed of prior to processing.

The combined yield for our newly merged company was over 21 tons per acre. Even more outstanding was sugar content, which ended at a new record of 19.3%. Total tons received for processing was in excess of 3.7 million tons.

Given the overall growing season, this crop exceeded our estimates. Several key factors led to this large crop. First, is early planting. More growers each year get out early when conditions are fit to plant their crop. In 2004, most of the crop was sown in April, thus extending our growing season. Second, growers continue to improve practices by following new research recommendations and their own experiences to increase quality and production. Finally, seed varieties currently grown have reached a new threshold in yield and sugar. Continuous improvement by the seed breeders, coupled with a variety

approval system focused on a balanced approach to production, has provided varieties significantly better than years ago. Our cooperative can now expect crop yield and quality very near the levels achieved this year.

Harvest provided a series of challenges in 2004. Lifting began near the First of October as our merger was being completed. Upon its completion, new and current members were given some flexibility to deliver to different stations to improve harvest efficiency and reduce freight costs. At the same time, an automated scale system was implemented that helped this effort and improved our ability to provide timely harvest information to growers. Load tickets, tare and sugar information was made available to members, via the Internet, within two days.

Adequate early delivery provided a good supply of beets to slice during a shorter pre-pile season than normal. As a result, a large percentage of our crop was piled at the receiving stations. More tons were permanently piled than ever before, causing increased daily volumes and increased pile heights. Digging conditions were very good, but temperatures were above normal throughout the last half of October and early November. This caused shutdowns and higher than normal beet temperatures. Harvest wrapped up quickly and was mostly completed by mid-November.

Storage and processing went very well through early December. Numerous production records were set because of a high quality crop and good factory efficiency; however, continued warm storage conditions and heavy rains took a significant toll on our beet piles. The agricultural and operations departments have worked very closely to manage this difficult situation to recover the most sugar possible. Many new beet recovery procedures have been utilized during this challenging season.

No doubt many lessons can be learned from this difficult storage and processing campaign. It is critical that members and staff evaluate the factors involved and make the necessary changes to manage through difficult circumstances when they arise in the future.

The 2004 crop was record breaking and heart-breaking at the same time. Working together and learning from this year will allow us to move forward in 2005 and beyond.

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# WASHINGTON SCENE



*By Dick Leach,  
Director of  
Government  
Relations*

There are some things that never change and some things that are always changing; the Washington scene fits both scenarios. We have a newly elected Congress (109th) with some new members and new leadership, but the same challenges with the new Congress that we had with the past Congress. We have a lame duck President who is no longer worried about re-election, but must still be concerned about his party retaining control of Congress after the next election in 2006. His power will begin to dwindle after about a year and he will be more concerned with building a favorable legacy than setting the world on fire.

We continue to face old challenges with the new Congress, such as the Central American Free Trade Agreement ("CAFTA," including the Dominican Republic); other free trade agreements being negotiated; Mexico and a NAFTA sugar agreement; and sugar-con-

taining products circumventing the Tariff Rate Quota ("TRQ").

New concerns are the formulation of a new Farm Bill in 2007 and maintaining the present law, without Congress attempting to reduce agricultural spending to balance the budget.

We have some new members of Congress; Joe Schwarz (R), representing southcentral Michigan's 7th Congressional District, previously held by Nick Smith; Secretary of Agriculture, Mike Johanns, former Governor of Nebraska, a sugarbeet state; and Carlos Gutierrez, Secretary of Commerce, former CEO of Kellogg. Gutierrez has been outspoken against the sugar program and Kellogg is one of our customers. U.S. Trade Representative, Robert Zoellick, will become Undersecretary of State. Zoellick negotiated CAFTA and, as I write this, a replacement has not yet been named.

As Congress settles in, it will have a full plate. With such weighty issues as social security, heavy budget issues, homeland security, and Iraq. They will be bogged down soon. It appears, the Democrats

will continue to provide opposition for the President on every issue.

Supporters of CAFTA are pushing hard to get it passed, including most agricultural groups and big business. The print media is giving a lot of attention to CAFTA. Those of us who are opposed, including labor, textiles, social and environmental groups, are continuing to maintain our Congressional opposition. I suspect the President will try to get Congressional approval of CAFTA before Congress gets too heavily involved in other issues. Until CAFTA is passed, the President's free trade agreement agenda will move slowly.

The sugar industry is beginning to tackle the 2007 Farm Bill and the sugar circumvention of the TRQ is being dealt with. An agreement with Mexico is being negotiated with little progress, but I believe it will be advantageous to both countries to have an agreement.

The reason that we have been so successful with past challenges is that we have been able to put the face of real people on the sugar industry; farmers, workers, and management. We are not a faceless industry and never will be.

Have a great spring. 🌱



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# Annual MEETING

On January 11, 2005, nearly 400 grower-owners, employees and guests gathered at Saginaw Valley State University for Michigan Sugar Company's Third Annual Shareholders Meeting. The 267 new shareholders who joined the Cooperative as part of the Michigan /Monitor merger were welcomed into the Cooperative by Chairman, Thomas Zimmer, who reported on remaining cost competitive. Chief Financial Officer, Denis

Boissonneault, reviewed last year's financial results which showed a steady increase in the financial strength of the Co-op. Marketing reports on sugar and co-products were presented, respectively, by Barry Brown from Imperial Sugar, and Chuck Hufford, from Midwest Agri-Commodities. Michigan Sugar Company's President and Chief Executive Officer, Mark Flegenheimer discussed the Co-op's strategy of working together for future success.

Members then were given the opportunity to ask questions.

Also, during this annual meeting, Chris Grekowicz was re-elected to the director-at-large seat on the Co-op's Board of Directors. The meeting was concluded by keynote speaker, Andy Briscoe, President of the Sugar Association. Mr. Briscoe discussed the issues facing sugar's image in the public's eye and the steps his association is taking to change that image. 







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# YOUR GROWING PARTNERS

## WEED MANAGEMENT RESEARCH IN SUGARBEET



*By Christy L. Sprague,  
Assistant Professor,  
Dept. of Crop and Soil Sciences*

This past year, we had eight different research projects in sugarbeets. Several of these projects focused on strategies to improve weed control while maintaining or improving sugarbeet safety. We would like to thank the growers, agronomists, and agriculturists from Michigan Sugar Company, and the former Monitor Sugar Company for their help with this research and Michigan Sugar Company for funding to help support this research.

### **DUAL MAGNUM AND OUTLOOK**

This was the second season in which Dual Magnum was registered for use in sugarbeets and, in December of 2004, Outlook received a registration in Michigan. Both of these herbicides are labeled for lay-by applications for residual control of grasses and some broadleaf weeds when sugarbeets have two, fully expanded true leaves. In past research and in grower's fields, Dual Magnum and Outlook have caused significant sugarbeet injury from various applications. To address this concern, we conducted research that examined different strategies to reduce potential injury concerns, while still trying to maximize weed control benefits from these herbicides. A field trial was conducted at two locations to examine various combinations of Dual Magnum and Outlook with micro-rate herbicide applications. Treatments consisted of the full rates of Dual Magnum and Outlook PRE, in the 1st, 2nd, 3rd, and 4th micro-rates and splitting rates of Dual Magnum and Outlook among various micro-rate timings. The timing of Dual Magnum and Outlook in the micro-rate applications had a significant impact on both sugarbeet injury and weed control. From the first year of research, it looks like there may be the potential to reduce sugarbeet injury, while maintaining weed control, by splitting Dual Magnum and Outlook applications over more than one micro-rate, as long as it is not applied in the first micro-rate

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*A sugarbeet field on a foggy day in Tuscola County, Michigan.*





timing. We will be repeating this research in 2005 to look at these strategies under a different set of environmental conditions.

VARIETAL TOLERANCE

In addition to examining different strategies with Dual Magnum and Outlook, we conducted a separate trial to determine if sugarbeet varieties responded differently to Dual Magnum and Outlook. Eleven sugarbeet varieties (the same 11 that were in the Sugarbeet Advancement Variety Trials) were treated with Dual Magnum and Outlook at three different application timings: PRE, 2-leaf, and 4-leaf sugarbeets. Sugarbeet varieties differed in their response to herbicide and application timing. All herbicide treatments resulted in at least 12 percent sugarbeet injury, with the greatest amount of injury being 75 percent. Greatest crop injury occurred from PRE applications of Dual Magnum and Outlook; with significantly less injury as application timings were delayed (Table 1). Averaged across herbicide treatments, one of the eleven varieties was more tolerant, four were moderately susceptible, and six were highly susceptible. Even though sugarbeet varieties varied in tolerance to Dual Magnum and Outlook, we will not be making herbicide recommendations based on sugarbeet varieties without further research.

NEW BETAMIX AND PROGRESS FORMULATIONS

Because of the EPA's mandate to remove isopherone, an inert ingredient found in Betamix and

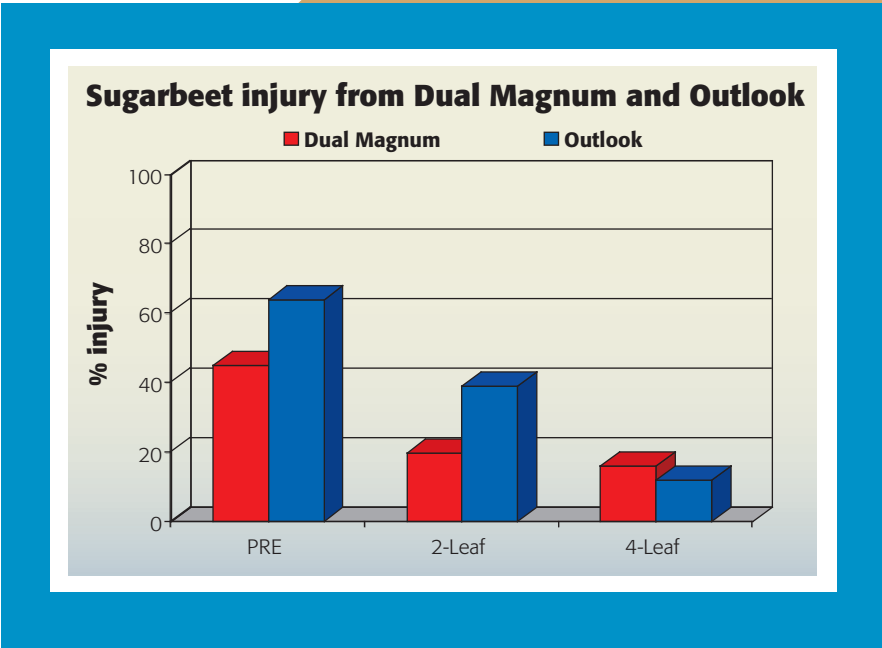
Progress formulations, we evaluated new formulations of Betamix and Progress again this year. These formulations were twice the strength of the current formulations. In testing these new formulations, weed control and sugarbeet tolerance were equivalent to the current Betamix and Progress formulations; however, when mixing the new formulations, a precipitate formed. Bayer CropScience is currently refining formulations to reduce mixing issues.

AMISTAR AND MICRO-RATE APPLICATIONS

Rhizoctonia root and crown rot and weed control are two major challenges in Michigan sugarbeet production. Amistar (dry formulation of Quadris), a commonly used

fungicide for Rhizoctonia Crown rot management, when applied with Betamix or Progress micro-rate herbicide applications, causes excessive sugarbeet injury. We looked at applying Amistar in combination with micro-rates, and at two days, and four days after the third micro-rate herbicide application. Applying Amistar after a micro-rate application was less injurious than the fungicide-herbicide tank mixture. Furthermore, applying Amistar four days after was safer than two days after the micro-rate herbicide application. Therefore, we are recommending for Michigan growers to apply Amistar for Rhizoctonia management no less than three days prior to or three days after a micro-rate herbicide application.

TABLE 1



Michigan State University research showing sugarbeet injury from Dual Magnum and Outlook, when applied preemergence (PRE), to two-leaf sugarbeets and to four-leaf sugarbeets.

## WEED MANAGEMENT RESEARCH IN SUGARBEETS 2004 (CONT'D)

### TIMING STANDARD-SPLIT RECOMMENDATIONS WITH GDD

We looked at using growing degree day recommendations (GDD) to time standard-split herbicide applications. Since using GDD recommendations have worked well for micro-rate applications, we thought basing standard-split applications on GDD we may be able to optimize weed control and help improve overall crop safety. This past year, planting date (early vs. late-April), weed species type, and application time all influenced weed control in this trial. Problems with stand reduction from insects (European chafer) did not allow us to collect sugarbeet injury data. We will be conducting this research a second year to determine how environmental conditions and different weed spectrums impact weed management recommendations.

### KOCHIA CONTROL

Over the last couple of years, kochia has been showing up in several sugarbeet fields in the Northern portion of Michigan's Thumb. Although we have not determined how kochia was introduced into these fields, we have found that these populations are resistant to ALS-inhibiting herbicides.

Because of the limited number of herbicides that are available for kochia control in sugarbeets, we initiated a trial to evaluate several standard-split programs for kochia control. Kochia control was unacceptable with typical standard-split applications of Betamix + Stinger + Upbeet. Adding two to four oz per acre of Nortron to each application of a standard-split treatment improved kochia control to 69 to 80 percent, increasing the Nortron rate further to six or eight oz per acre did not improve kochia control. Although inconclusive, we did observe an increase in control when Outlook was added to Betamix + Nortron. Kochia, particularly ALS-resistant kochia, is a tremendous problem in other sugarbeet growing regions of the U.S.; therefore, it is extremely important that we get this problem weed under control before it becomes wide-spread throughout Michigan. If you are aware of a kochia problem in your area; please contact your Michigan Sugar Company agriculturist or Michigan State University.

### ROUNDUP READY SUGARBEETS

We are currently still evaluating weed control systems in Roundup Ready sugarbeets. This past year

we evaluated a new Roundup Ready sugarbeet event (H7-1). This event tolerated up to three applications of 0.75 lb ae/A of glyphosate, or a total of 66 fl oz/A of Roundup WeatherMAX without any injury or yield loss.

### POTENTIAL NEW HERBICIDE

This past year, we evaluated a potential new herbicide for weed control in sugarbeets. The herbicide was metamitron or Goltix brand herbicide. This herbicide is commonly used for weed control in sugarbeets in Europe. We conducted two different studies at two locations that examined both soil-applied and postemergence activity of this herbicide. Goltix provided excellent soil-applied activity on common lambsquarters and good to excellent control of redroot pigweed, Powell amaranth, and Pennsylvania smartweed. Goltix soil-applied activity started out good on giant foxtail, but declined over time at one of the two sites. Postemergence Goltix provided good control of both common lambsquarters and pigweed species. Although Goltix is not currently labeled in the U.S., there may be some potential for use in Michigan if Goltix is eventually labeled. 🌱





## DETERMINING OPTIMUM NITROGEN RATES FOR SUGARBEET PRODUCTION



*By Amy Guza,  
Graduate Research  
Assistant,  
Michigan State  
University*

*Amy Guza conducted her research under Dr. Carrie Laboski, currently a Soil Fertility and Nutrient Management Specialist, University of Wisconsin, Madison.*

Field studies were conducted in 2002 through 2004 throughout the Saginaw Valley and Thumb of Michigan to determine the optimum rates of nitrogen for sugarbeet production. Nitrogen rates were compared at 14 sites to collect data on maximizing sugarbeet yield and economic return. Nitrogen rates ranged from 0 to 210 lbs per acre,

in 30 lb per acre increments in 2002, and 0 to 200 lbs per acre, in 40 lb per acre increments in 2003 and 2004. All plots received 30 or 40 lbs of nitrogen per acre as urea, at planting, with the exception of control plots, in which no nitrogen was applied. The remaining amount of nitrogen needed, to complete the treatment, was sidedressed when sugarbeets had two to four true leaves.

A preliminary analysis of the data indicated that at the majority of the sites, the yield optimizing nitrogen rate, recoverable white sucrose per acre optimizing nitrogen rate, and payment-optimizing nitrogen rate, were similar within 20 lbs of nitrogen per acre, at each site. When the previous crop was a legume, soybeans or dry beans, the optimum nitrogen rate

ranged from 100 to 130 lbs of nitrogen per acre. When sugarbeets were grown after corn, the optimum nitrogen rate ranged from 90 to 150 lbs of nitrogen per acre.

Sugarbeet yield did not respond to nitrogen fertilization at three out of fourteen sites. Currently, it is not known how to predict which fields can achieve optimum yield without nitrogen fertilization. Soil organic matter may be an important factor in identifying sites that are non-responsive to nitrogen, but further investigation is required. It is important to note that all three sites that were non-responsive to nitrogen also had a previous legume crop. The study results are preliminary, and further investigation of the data will be conducted before final conclusions will be presented. 🌱



## MICHIGAN SUGAR COMPANY RESEARCH UPDATE



*By Jim Stewart,  
Director of  
Research*

### **GENERIC HERBICIDES**

The Ag Value line of "generic" sugarbeet herbicides have been sold to United Phosphorus and will be available for growers this year. United Phosphorus has marketed "generic" sugarbeet herbicides prior to acquiring the Ag Value products. As a result, several common sugarbeet herbicides will be available under two or three different brand names in 2005. Table 1 illustrates the different formulations of sugarbeet herbicides that will be sold in Michigan in 2005.

Michigan Sugar Company has evaluated the Ag Value herbicides for three years and the United Phosphorus herbicides for two years. We have not detected any differences between these formulations and the Bayer CropScience products. Similar results have been reported by other researchers.

### **DUAL MAGNUM AND OUTLOOK HERBICIDES**

Dimethenamid-p is the active ingredient in Outlook. Outlook is a soil active herbicide that controls annual grasses and some small seeded broadleaf weeds such as redroot pigweed and eastern

black nightshade. Outlook will not control weeds that have already emerged. Outlook can be applied to sugarbeets with two true leaves or more. Pre-plant incorporated (PPI) and preemergence (PRE) applications of Outlook are prohibited. The rate range for a single Outlook application is from 12 to 18 fl oz per acre. Michigan Sugar Company has evaluated Outlook in sugarbeets over several years. Postemergence applications of Outlook beginning at the two-leaf stage are generally safe. PPI and Pre treatments have caused unacceptable sugarbeet injury.

Limited data suggests that Outlook, included in a micro-rate application, will increase the level of sugarbeet injury. Additional trials will be conducted to determine the safety of Outlook applied in combination with micro-rates and with other early season treatments such as Amistar for Rhizoctonia crown rot control. At this time, we recommend that Outlook not be applied in the first micro-rate application.

Dual Magnum has been registered in sugarbeets since 2003 and we have gained valuable information about how to use Dual Magnum safely and effectively. When Dual Magnum was initially labeled in 2003, it could be applied PPI and PRE as well as postemergence to sugarbeets.

Research trials in Michigan, have consistently shown that Dual Magnum is not safe applied PPI or PRE to sugarbeets. Michigan Sugar Company only recommends postemergence applications. Some growers have applied Dual Magnum PPI or PRE and experienced unacceptable sugarbeet injury. Syngenta has since taken the PPI and PRE uses off the label. Last year, a Special Local Needs label was obtained through the Beet Sugar Development Foundation allowing Dual Magnum to be applied PPI or PRE. Growers who applied Dual Magnum PPI or PRE signed indemnification papers releasing Syngenta and Michigan Sugar Company from any liability caused by the Dual Magnum application. The Special Local Needs label will expire on April 2, 2005, and Michigan Sugar Company will be monitoring any new developments in renewing the label for the 2005 growing season.

Michigan Sugar Company research has indicated that Dual Magnum added to a micro-rate application can increase sugarbeet injury significantly. Dual Magnum applied in the first micro-rate caused the most injury. Changing weather patterns from cool and cloudy to warm and sunny also contributes to injury from post-emergence Dual Magnum applications. Sugarbeet injury from





Dual Magnum will also increase when mixed with standard splits or with Amistar.

Michigan Sugar Company recommends applying Dual Magnum at 1.33 pints per acre after sugarbeets have reached the two true leaf stage (leaves fully expanded). This would normally be about the time of the second micro-rate timing or later. Injury potential can be reduced by spraying late in the day or by waiting until the sugarbeets are past the two true leaf stage.

## BEETCAST UPDATE

Michigan Sugar Company has been evaluating the BeetCast Cercospora prediction model since 2002. The main location for these trials has been at the Sylvester Farm near Quanicasee, Michigan. When averaged over three years, applying fungicides at 55 DSVs and re-applying at every 35 DSVs provided the best control of Cercospora leafspot along with the highest sugarbeet yield. Applying fungicides every 55 DSVs required fewer fungicide applications on average than the scouting alone treatment to achieve the same level of Cercospora leafspot control. Applying fungicides every 70 DSVs was the least effective of all the treatments for controlling Cercospora leafspot. Compared to the 55/35 DSV treatment, the untreated check had 5 percent less

sucrose, 12 percent fewer tons per acre and lost 18 percent of the recoverable white sucrose per acre.

Five additional small plot replicated trials were conducted in 2004. These trials were located in Breckenridge, Bay Port, Ruth, Sandusky and at the Bean and Beet Research Farm.

In 2005, Michigan Sugar Company plans to monitor the Cercospora leafspot disease levels in each growing region by means of spore traps or indicator plants. We also plan to evaluate the difference between susceptible and tolerant sugarbeet varieties.

The BeetCast model is designed to predict when the environment is

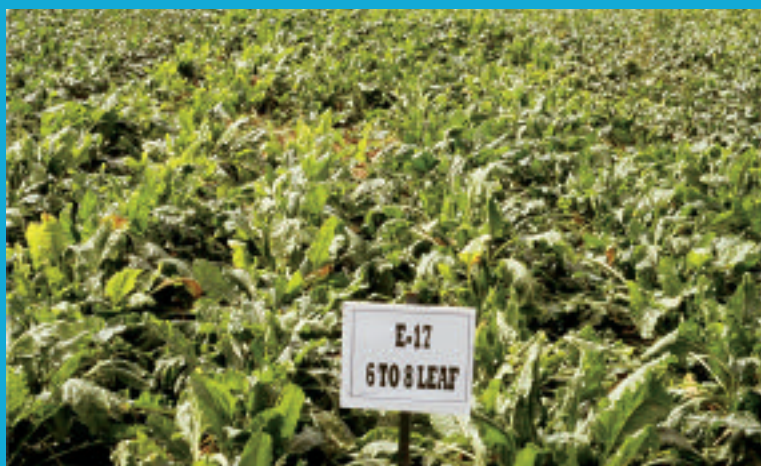
suitable for disease development. We also need to consider other factors such as the inoculum level, variety susceptibility, row spacing, plant population, planting date, canopy closure and possibly other factors to successfully manage Cercospora leafspot. For best results, we are recommending that you work with your agriculturist to decide when to spray. They can help you customize the BeetCast system to your farm.



**TABLE 1**

### Sugarbeet herbicides available in 2005

	Bayer CropScience	United Phosphorus	(previously) Ag Value	Dow AgroSciences
Ethofumesate	Norton	Ethotron SC	Etho SC	
Desmedipham + Phenmedipham	Betamix	Phen-Des 8+8	D-P Mix	
Desmedipham + Phenmedipham+ Ethofumesate	Progress	B n B Plus	Des-Phen-Etho	
Clopyralid			Clopyr Ag	Stinger



*Factors Influencing Rhizoctonia Severity: Variety, Field History, Previous Crop, Manure, Nematodes, Soil Movement, Temperature, Moisture, Soil Tillage. (Top): Test plot with beets infected with Rhizoctonia solani. (Middle): Test plot with fungicide applied at six to eight leaf stage. (Bottom): Test plot with fungicide applied in-furrow.*

## MANAGING RHIZO CROWN ROT IN SU



*By Steven Poindexter,  
Extension Sugarbeet  
Educator, Sugarbeet  
Advancement*

Rhizoctonia crown rot (*R. Solani* AG-2-2) is estimated, on average, to reduce sugarbeet yields in Michigan by at least one ton per acre; valued at \$7 million in lost grower revenue each year. Only in the last few years, have very effective management tools such as fungicides and high-quality resistant varieties been available. Prior to fungicides and new varieties, the only tools available to manage Rhizoctonia crown rot were crop rotation, limiting soil movement to the crown and the use of low quality resistant varieties. With recent research conducted by Sugarbeet Advancement and Michigan Sugar Company researchers, cost effective ways have been found to minimize the effect of this disease.

### FACTS ABOUT RHIZOCTONIA CROWN ROT

*Rhizoctonia solani* is a common soil-borne fungus with most of the inoculum residing in the top six inches of soil. It survives on previously infected plants and colonized plant materials added to the soil. This disease has a wide array of hosts ranging from field crops, vegetables, ornamentals, fruits and weeds. Common host crops include sugarbeets, soybeans, dry beans, canola and sunflowers. This disease is active in wet damp soils. Soil temperatures of 70° to 85° F are optimal for infection; however,





# RHIZOCTONIA GARBEETS

the temperature for infection can range from 55° to 95° F.

## WHY ARE THERE INCREASED LEVELS OF RHIZOCTONIA CROWN ROT?

One primary cause of increased Rhizoctonia crown rot is because inoculum levels have been maintained or have increased in recent years. Planting susceptible crops along with closer rotations with susceptible crops are certainly key factors. Environmentally, conditions which have been warm with more violent rain storms, which splash dirty water into the crown, also may increase the number of infection periods. Reduced soil quality is also thought to increase the incidence of disease.

## FACTORS INFLUENCING RHIZOCTONIA CROWN ROT SEVERITY

No one single factor generally influences disease severity, but a combination of factors is usually thought to be responsible. Large differences occur in the susceptibility of varieties. Great efforts have been made in breeding for resistance or increasing tolerance to the disease. Previous history of Rhizoctonia crown rot is a good indication that high inoculum levels are present. Planting sugarbeets after susceptible previous crops will also increase disease severity. Fields that have a history of manure generally have less disease due to

improved soil quality. Experience also indicates fields with sugarbeet cyst nematodes are good candidates for increased disease severity. Soil movement into the sugarbeet crown can increase the level of Rhizoctonia crown rot. Normally, heat and moisture stress increase disease occurrence. Soils that have poor tilth (i.e., compaction) will generally have an increase in Rhizoctonia crown rot severity.

## STRATEGIES FOR CONTROLLING RHIZOCTONIA CROWN ROT

Strategies for control of Rhizoctonia crown rot include use of strobilurin fungicides, Amistar/Quadris, and resistant varieties. Which strategy to use depends upon the potential for disease incidence and severity. Predicting

the impact of Rhizoctonia crown rot on sugarbeet yield, in individual fields, is difficult. However, based on current knowledge, Sugarbeet Advancement has developed a rating system that may be helpful in choosing a management strategy. This test must be used on a field by field basis. In fields that have a high disease potential, consider planting resistant varieties, applying Amistar to susceptible varieties or plant resistant varieties and apply Amistar. In fields predicted to have moderate levels of *Rhizoctonia solani*, use either a resistant variety or plant a susceptible variety and apply Amistar. Trials conducted in fields with low levels of *Rhizoctonia solani* show marginal economic return from applying Amistar to susceptible varieties (Table 1).

**TABLE 1**

**Response of Quadris /Amistar Application at Different Rhizoctonia Infection Levels**

Rhizoctonia Infection Level	# of Locations	RWSA		TONS		% Sugar		Gross \$ Return*
		Check	6-8 Leaf	Check	6-8 Leaf	Check	6-8 Leaf	
Low	8	5221	5515	20.64	21.49	17.73	17.92	\$37
Medium	5	4638	5076	17.59	18.84	18.29	18.42	\$55
Heavy	5	3472	4473	13.42	17.16	17.60	18.05	\$127

\* Average Gross Revenue Enhancement Compared to Unsprayed Check.

Sugarbeet Advancement Summary - 2001 - 2002 - 2003 - 2004 (18 Trial Locations)

## MANAGING RHIZOCTONIA CROWN ROT IN SUGARBEETS (CONT'D)

### APPLICATION METHODS, RATES AND TIMING

In order for Quadris/Amistar to have the best efficacy, it must be applied before, at, or near the time of infection. Applications of Quadris/Amistar at the four- to six-leaf stage perform very well; however, good results have been achieved applying Quadris/Amistar between the two to eight leaf stage (Tables 2, 3 and 4). Research also indicated that in-furrow applications can be more effective than foliar applications, particularly under high disease pressure and early infection periods. In-furrow applications can slow seed emergence and may be aggravated with "pop-up" fertilizers and cold soil temperatures. In-furrow applications should be sprayed in a six- to seven-inch T-band, not dribbled in-furrow. Preemergence applications to the soil surface are not effective. Foliar applications after the eight-leaf stage are less effective than earlier applications and should be made in an eight- to ten-inch band. The recommended rate of Quadris is 10.5 fluid ounces per acre and the rate of Amistar is 3.3 dry ounces per acre. Foliar applications should be no sooner than three days before, or three days after, a micro-rate herbicide application to reduce crop injury from the interaction of

**TABLE 2**

**QUADRIS/RHIZOCTONIA TRIAL - 2002  
Bay County – Severe Infestation**

Treatment	RWSA	Actual Yield T/A	Rhiz. Beets 1200 Ft.
RH-5 In Furrow	5918	23.68	22
RH-5 Check	5377	22.07	132
E-17 In Furrow/6 to 8 Leaf	5132	20.80	171
E-17 In Furrow	4838	19.78	231
E-17 6 to 8 Leaf	4388	17.34	428
E-17 Check	4084	15.13	612
<b>LSD 5%</b>	<b>902</b>	<b>2.08</b>	<b>161</b>

*Sugarbeet Advancement - 2002*

**TABLE 3**

**QUADRIS/RHIZOCTONIA TRIAL - 2003  
Bay County – Severe Infestation**

Treatment Name	RWSA	Actual Yield T/A	Rhiz. Beets 1200 Ft.
RH-5 In Furrow	5591	21.40	148
E-17 In Furrow / 6-8 Leaf	4381	17.37	353
E-17 In Furrow	4290	16.71	539
E-17 2-4 Leaf / 6-8 Leaf Split	3843	15.23	551
E-17 2-4 Leaf	3683	15.00	632
RH-5 Check	3433	13.52	636
E-17 6-8 Leaf	3305	13.43	651
E-17 Check	1514	6.44	1453
<b>LSD (5%)</b>	<b>568</b>	<b>2.29</b>	<b>249</b>

*Sugarbeet Advancement - 2003*





methyated seed oil (MSO) used in the micro-rate herbicide program and the fungicide.

## SUMMARY OF RESULTS

Infection of sugarbeets with *Rhizoctonia solani* occurs early in the season; with the resulting symptoms of sick or dead plants observed in early to mid-summer. Timely applications of Quadris/Amistar at or near the initial infection period are ideal and cost effective under moderate to heavy disease levels. In-furrow fungicide applications are more effective than foliar applications under high disease levels (Table 5). Foliar applications should be timed between two- to eight-leaf stage sugarbeets. Later applications are less effective. With a moderate disease level, resistant varieties alone and treated susceptible varieties produce a similar yield. Use the rating test developed by Sugarbeet Advancement to determine the probability of an economic response from managing *Rhizoctonia* crown rot.



**TABLE 4**

### AMISTAR/RHIZOCTONIA TRIAL – 2004 Bay County – Severe Infestation

Treatment	RWSA	Actual Yield T/A	Rhiz. Beets 1200 Ft.
RH-5 In Furrow	4682	17.44	22
RH-5 (2–4 Leaf)	4658	17.06	23
RH-5 Check	4640	16.83	103
E-17 Lo Rate (2–4 Leaf)	4324	15.72	340
E-17 In Furrow	4290	15.77	290
E-17 (4–6 Leaf)	3939	14.25	377
E-17 (6–8 Leaf)	3856	13.85	339
E-17 (2–4 Leaf)	3792	14.06	389
E-17 Emergence	3679	13.66	479
E-17 Pre-Emergence	3494	12.89	503
E-17 Check	3436	12.66	647
<b>LSD (5%)</b>	<b>644</b>	<b>1.96</b>	<b>139</b>

*Sugarbeet Advancement - 2004*

**TABLE 5**

### COMBINED RHIZOCTONIA FUNGICIDE TRIALS Three Trials – Severe Infestation

	RWSA	T/A	RWST	% Sugar	% CJP	Population 100 Ft. Row				Rhiz.* Beets 1200 Ft.
						10 Day	20 Day	30 Day	Harvest	
RH-5 In Furrow	5397	20.84	260	17.69	94.48	66	213	242	215	64
RH-5 Check	4483	17.47	258	17.64	94.29	104	234	257	191	290
E-17 In Furrow	4473	17.42	256	17.78	94.28	50	220	265	200	353
E-17 6-8 Leaf	3850	14.86	259	17.88	94.41	96	248	263	170	473
E-17 Check	3011	11.40	259	17.31	94.62	89	239	266	99	904
<b>AVERAGE</b>	<b>4243</b>	<b>16.40</b>	<b>259</b>	<b>17.66</b>	<b>94.42</b>	<b>81</b>	<b>231</b>	<b>259</b>	<b>175</b>	<b>417</b>
<b>LSD (5%)</b>	<b>1131</b>	<b>4.01</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>30</b>	<b>NS</b>	<b>39</b>	<b>303</b>
<b>LSD (10%)</b>	<b>912</b>	<b>3.23</b>	<b>NS</b>	<b>NS</b>	<b>.28</b>	<b>51</b>	<b>24</b>	<b>NS</b>	<b>32</b>	<b>244</b>
<b>CV (%)</b>	<b>14</b>	<b>13</b>	<b>4</b>	<b>3</b>	<b>.2</b>	<b>42</b>	<b>7</b>	<b>7</b>	<b>12</b>	<b>39</b>

\* Dead or Dying Beets per 1200 Foot of Row

*Sugarbeet Advancement - 2002 - 2003 - 2004*

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*Composed of sugarbeet residue after extraction of sugar.*

MICHIGAN SUGAR COMPANY OFFERS

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Application should be conducted to not impact any water. A more detailed discussion can be found in the Generally Accepted Agricultural and Management Practices for Nutrient Utilization as approved by the Michigan Commission of Agriculture at the following internet address: [http://www.michigan.gov/mda/0,1607,7-125-1567\\_1599\\_1605-70361-,00.html](http://www.michigan.gov/mda/0,1607,7-125-1567_1599_1605-70361-,00.html)



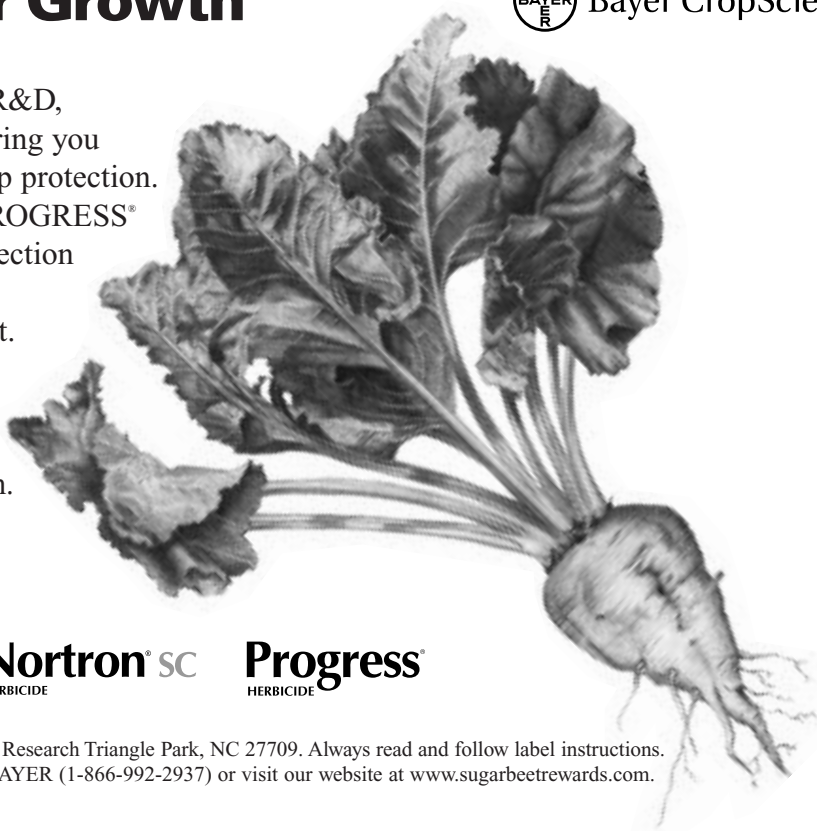


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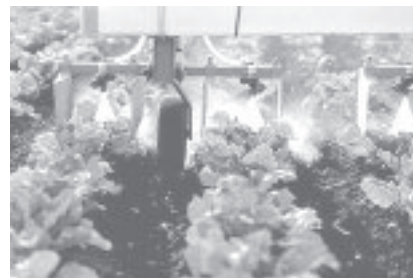
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# YOUR SUGARBEET GROWING PARTNERS



*Ralph Fogg,  
Chief Agronomist*



*Corey Guza,  
Agronomist*

The agricultural staff is an important component to the success of Michigan Sugar Company. The mission of the agricultural staff is to provide the highest quality raw material for our factories to increase the overall efficiency of the Cooperative while maximizing grower-owners' net return per acre of beets. The agricultural staff works toward this goal by assisting growers in

producing a higher quality sugarbeet, conducting on-farm research focused on quality and efficiency, and maintaining the piling equipment and piling yards to efficiently receive beets.

The agriculturists are the backbone of the agricultural staff and work closely with growers. In the spring, agriculturists sell seed and herbicides as well as help growers plan for the growing season. Agriculturists:

- Test planters and recommend improvements to equipment.
- Attend meetings to obtain the latest technical information.
- Have years of experience with sugarbeets and understand individual grower needs.

The agriculturists also play an integral role in our research efforts by helping organize trials for Sugarbeet Advancement and Michigan Sugar Company. They collect data including stand counts, visual evaluations, sugar samples and sugarbeet yield. They also improve trial quality by finding ideal locations to conduct research trials. Through their involvement in innovative research, the agriculturists have first-hand knowledge of how to integrate new ideas into individual farming operations.

Agriculturists can supply all of the information needed to raise a quality and profitable sugarbeet crop. Some of the services that they provide include variety selection, pest management recommendations, soil sampling, fertility recommen-





dations, field scouting, and plant health diagnostics. Agriculturists also have access to many resources for solving problems within sugarbeet fields. Michigan Sugar Company has excellent working relationships with Michigan State University, USDA, A&L laboratories and other research institutions and laboratories that service the sugarbeet industry. When a problem with a sugarbeet field cannot readily be solved, they can take soil and leaf samples and send them to diagnostic labs to obtain more information about the situation. Once all of the facts have been obtained, they can then offer solutions to correct the problem.

Agriculturists also have experience troubleshooting equipment, and can help with adjustments on planters, sprayers and harvesting equipment. They also have experience with Michigan Sugar Company's new Internet services that provide harvesting information and access to BeetCast.

In addition to providing agonomic assistance, agriculturists have many responsibilities during and after sugarbeet harvest. They supervise mechanics and piling yard personnel to ensure that problems associated with harvest are solved. They also manage beet storage and the transfer of beets to the factory locations to maximize factory efficiency.

The agriculturists and the entire Michigan Sugar Company agricultural staff are a non-biased source of sugarbeet agonomic information focused on increasing shareholder value. We provide numerous services that add value to individual farms



*(Above and facing page): Agriculturists attending summer field days to obtain the most recent sugarbeet growing information.*

along with the entire cooperative. Michigan Sugar Company continues to invest in your agriculturists by encouraging BSDF Beet School attendance and other higher education opportunities. The field staff is supported by two agronomists and a research department that is capable of investigating many

areas of sugarbeet production and developing solutions to problems, working in partnership with the grower-owners to make sugarbeets a profitable crop. 🌱

# AGRICULTURIST PROJECT SUMMARY



*Corey Guza,  
Agronomist*

Each year the agriculturists organize research projects to test new ideas in grower fields. They work through Sugarbeet Advancement and help Steve Poindexter find trial locations and collect data. The results of Sugarbeet Advancement trials can be found in the "On Farm Research and Demonstration" publication. The agriculturists also conduct trials exploring their own interests (i.e., fertility, leafspot, weed management, etc.) through Michigan Sugar Company. In 2004, the agriculturists organized strip trials related to nematodes, rhizomania, Rhizoctonia crown rot, cover crops, nitrogen and Cercospora leafspot. Summarized is the nitrogen and BeetCast research conducted by the agriculturists.

## NITROGEN RATES

Two of the nitrogen trials that were conducted through Michigan Sugar Company agriculturists were located in Verona, Michigan (Table 1) and Dover, Ontario (Table 2). Each trial demonstrated advantages to reducing the amount of nitrogen applied to the sugarbeet crop. In the D&B Karg Farm trial located in Verona, applying a total of 100 lbs of nitrogen per acre resulted in a sugarbeet yield equal to 130, 160 and 190 lbs per acre of nitrogen (Table 1). In the Brian Fox trial, located in Dover, a total of 78 lbs per acre of nitrogen

resulted in a similar yield to 128 lbs of nitrogen per acre (Table 2). The results from these trials indicate that there is an opportunity to reduce the amount of nitrogen applied to a sugarbeet crop while maintaining sugarbeet yield and improving sugarbeet quality and economic return.

## BEETCAST

The agriculturists were interested in conducting trials on a large scale in addition to small plot trials to help determine the effectiveness of the BeetCast model for managing Cercospora leafspot. Trials were conducted throughout the sugarbeet growing region of Michigan

**TABLE 1**

**D&B Karg Farms Nitrogen Trial**

Sugarbeet Yield					
Additional Nitrogen lbs/acre	% SUGAR	% CJP	RWST	RWSA	TONS/ACRE
80	20.74	92.34	292	9196	30.53
110	20.64	92.47	291	8926	29.73
140	20.57	92.74	292	9003	29.91
170	20.49	92.26	288	8764	29.56
LSD	NS	NS	NS	NS	NS
Planting date: 5-Apr Variety: 5451 Row spacing: 28" Fertility: Fall—600lbs—0-0-60 Starter—270 lbs —7-33-9—plus micros					
Harvest date: 1-Nov Agriculturist: Lewis Parks Location: Verona, Michigan					

**TABLE 2**

**Brian Fox Farms Nitrogen Trial**

Sugarbeet Yield					
Additional Nitrogen lbs/acre	% SUGAR	% CJP	RWST	RWSA	TONS/ACRE
50	19.88	92.29	279	9333	33.50
100	19.38	93.11	270	9205	34.09
LSD	NS	NS	NS	NS	NS
Planting date: 10-Apr Variety: 5451 Row spacing: 30" Fertility: Fall—130 lbs—P2O5 180 lbs K2O 28 lbs N					
Harvest date: 20-Oct Agriculturist: Wayne Martin Location: Dover, Ontario Canada					



TABLE 3

Sugarbeet Yield								
Factory District/Grower		% SUGAR	% CJP	RWST	RWSA	TONS/ ACRE	Leafspot Rating	Powdery Mildew
Caro/S&N Farms Inc <sup>1</sup>	BeetCast	20.58	91.68	284.91	5686.87	19.96	2	-
	Standard Program	19.93	91.17	272.02	5677.13	20.87	4	-
Caro/Zwerk & Sons Farms <sup>2</sup>	BeetCast	20.56	91.73	284.99	7409.72	26.00	1.5	-
	Standard Program	19.66	91.44	269.77	6879.17	25.50	3.5	-
Caro/LaRaCha Farms <sup>3</sup>	BeetCast	21.65	92.41	305.85	5881.51	19.23	2.5	-
	Standard Program	21.50	92.07	301.30	5577.12	18.51	3.75	-
Sebewaing/Haag Farms <sup>4</sup>	BeetCast	19.58	91.83	271.23	7562.01	27.88	0.5	-
	Standard Program	19.25	91.87	266.62	7172.10	26.90	1.75	-
Sebewaing/Stecker Farms 1 <sup>5</sup>	BeetCast	20.55	91.68	284.52	5983.38	21.03	0	-
	Standard Program	19.80	91.83	274.48	5434.70	19.80	1.25	-
Sebewaing/Stecker Farms 2 <sup>6</sup>	BeetCast	19.50	91.80	269.86	7162.07	26.54	0	0%
	Standard Program	19.47	91.56	267.86	6650.98	24.83	1.75	50%
Croswell/ Gerstenberger Farms <sup>7</sup>	BeetCast	19.44	91.38	266.24	5279.53	19.83	0	0%
	Standard Program	19.27	91.69	265.80	5199.05	19.56	0.75	30%
Carrollton/ Ridgeview Farms <sup>8</sup>	BeetCast	20.69	92.74	293.80	6675.07	22.72	1	5%
	Standard Program	20.50	92.25	287.56	6090.54	21.18	2	65%

	1. S&N Farms Inc.	2. Zwerk & Sons Farms	3. LaRaCha Farms	4. Terry Haag	5. Don Stecker 1	6. Don Stecker 2	7. Gerstenberger Farms	8. Ridgeview Farms
Planting date	16-Apr	9-Apr	6-May	12-Apr	12-Apr	12-Apr	10-Apr	11-Apr
Variety	Prompt/963	5310	5451	5451	5451/E17	5451/E17	5451	5451
Harvest date	25-Oct	22-Oct	28-Oct	28-Oct	4-Oct	4-Oct	21-Oct	25-Oct
Fungicide Applications								
	Standard							
Fungicide/rate	Eminent 13oz	Headline 9.2 oz	Gem 7 oz	Amistar 3 oz	Gem 6 oz	Gem 6 oz	Headline/9.2 oz	Headline/9.2 oz
Date applied	12-Jul	12-Jul	12-Jul	22-Jul	12-Jul	12-Jul	6-Aug	16-Aug
Application timing	55 DSV	60 DSV	55 DSV	55 DSV	55 DSV	55 DSV	-	-
	BeetCast							
Fungicide/rate	Eminent 13oz	Headline 9.2 oz	Gem 7 oz	Amistar 3 oz	Gem 6 oz	Gem 6 oz	Gem 6 oz	Eminent/13 oz
Date applied	12-Jul	12-Jul	12-Jul	22-Jul	12-Jul	12-Jul	20-Jul	9-Jul
Application timing	55 DSV	60 DSV	55 DSV	55 DSV	55 DSV	55 DSV	55 DSV	55 DSV
Fungicide/rate	Headline 9.2 oz	Super Tin 5 oz	Super Tin 5 oz	Eminent/13 oz	Eminent/13 oz	Eminent/13 oz	Eminent/13 oz	Headline/9.2 oz
Date applied	5-Sep	5-Sep	5-Sep	7-Sep	5-Sep	5-Sep	25-Aug	16-Aug
Application timing	110 DSV	115 DSV	110 DSV	110 DSV	110 DSV	110 DSV	110 DSV	110 DSV
Agriculturist	Jeff Karst	Jeff Karst	Jeff Karst	Jeff Elston	Jeff Elston	Jeff Elston	Tim Muz	Dave Bailey
Location	Blumfield	Blumfield	Caro	Sebewaing	Sebewaing	Sebewaing	Sandusky	Breckenridge

examining leafspot control using the BeetCast model compared to standard leafspot management programs (Table 3). A total of eight trials were established and harvested. Each trial was conducted in 20- to 40-acre fields. The fields were split in half with one half of

the field representing a standard leafspot application timing compared to following BeetCast to manage leafspot. The standard timing was a single fungicide application made after the first symptoms of leafspot appeared. The BeetCast treatments were

made every 55 DSVs, for a total of two fungicide applications. Following BeetCast resulted in improved sugar content, recoverable white sucrose per acre, leafspot control and powdery mildew control compared to the standard treatments in all of the trials (Table 3). 🌱

# NEW PROCESS OPERATIONS A PART OF MICHIGAN SUGAR



*By Herb Wilson,  
Vice President of  
Operations*

With the Bay City factory now a part of Michigan Sugar Company, we have gained additional capacity, many talented employees and some new processes.

One such process involves the ability to extract additional sugar from the molasses. In the traditional factory operation, sugar is crystallized from the beet syrups until it is no longer economically feasible to continue that process. This leaves the molasses with a sugar content of about 45 to 50 percent and represents as much as 15 percent of the sugar originally in the beet.

In the course of a year, the Bay City molasses desugarization process is capable of processing all of the molasses produced at that location plus a substantial amount from sources outside of Bay City. In prior years, it was necessary for Monitor Sugar to purchase this additional molasses. With molasses available from our other four locations, the Bay City installation is an excellent fit for Michigan Sugar Company.

Eric Ekern (Production Manager at Bay City) has written a description of the desugarization process. Eric has been working with chromatography and ion exchange systems since 1982, when he was in the high fructose corn sweetener industry. Eric started in the beet sugar business in 1978 as a chemist for Spreckels Sugar.

He worked at three different Spreckels factories with roles in the laboratory and then moved into factory operations as a Production Manager. He was Technical Manager for Amstar Corporation's corn plant in Dimmitt, Texas, and was Factory Manager for Western Sugar in Greeley, Colorado, before moving to Monitor Sugar in 1999 as Process Development Manager to lead the operation of the new desugarization plant.

## THE MOLASSES DESUGARIZATION PROCESS



*By Eric Ekern,  
Production  
Manager,  
Bay City*

Molasses desugarization is used by most of the beet sugar companies in the United States to recover additional sugar from the beets they process. About 15 percent of the sugar in the beets usually ends up in molasses. The molasses desugarization process is able to recover about 75 percent of this sugar. Beet molasses is normally sold into the animal feed or yeast production markets. When molasses is desugarized, there are two other co-products that are made from the molasses in addition to the sugar recovered in a concentrated liquid referred to as extract. These two co-products are CMS (concentrated molasses solids) and betaine. CMS is produced at about 40 percent on molasses

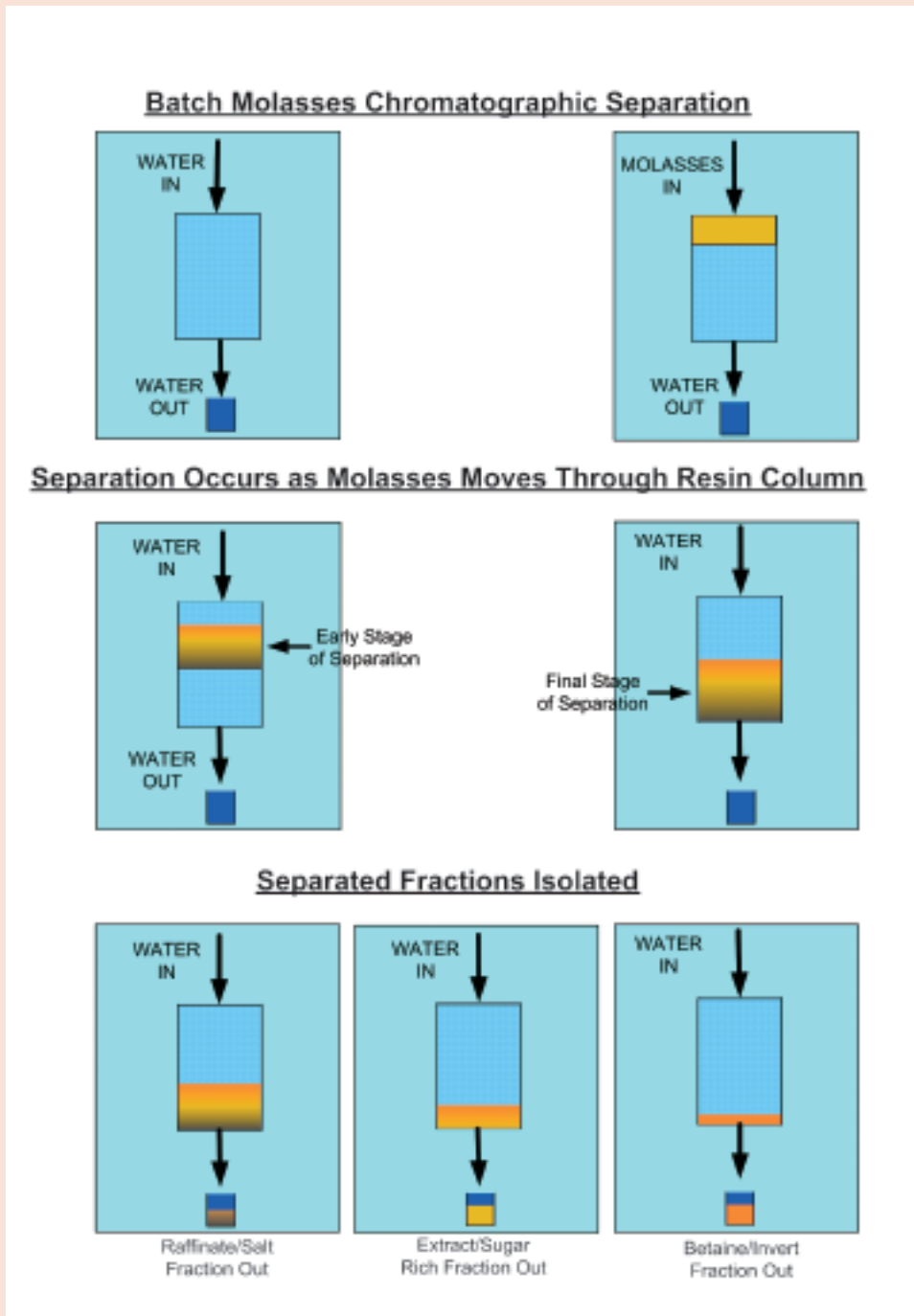
feed and contains most of the sugar that is not recovered in the sugar rich extract and all of the nonsugars, other than the amino acids, in the molasses. The betaine (amino acid) fraction is about 10 percent on molasses and is about 34 percent betaine in the final concentrated liquid. These co-products are usually sold into the animal feed market.

The desugarization process is interesting to understand because it takes a scientific, analytical process used in the laboratory and scales it up so that it is large enough to process 350 tons of molasses a day. This process is called chromatographic separation. Instead of just processing a sample and determining what is in the sample, as in the laboratory, the commercial process separates the molasses components, mostly sugar, on a large scale. A series of tanks are filled with small plastic beads called ion exchange resin. When molasses is pumped into the tanks, some components of the molasses move through the resin faster than other components. After adding some molasses, water is then added to push all the components through the resin. Our separator system has 12 tanks filled with resin beads. The beads are about the same size as the sugar crystals we produce. The slowest moving component is betaine, not sugar. The first four tanks are used to separate the betaine after it lags behind the sugar. This is done by opening a valve and allowing the betaine to come out of the system at just the right time. The betaine is then



concentrated in an evaporator to 60 percent solids. Another valve collects the “upgrade” which is the molasses without the betaine. This upgrade is concentrated and sent to the next step. The next eight tanks are used to separate sugar from the rest of the molasses components. The salty components move through the fastest, so they are collected and called raffinate. This raffinate becomes CMS when it is concentrated in evaporators to 60 percent solids. The portion containing most of the sugar is collected separately and concentrated to 70 percent solids syrup called extract. It is over 90 percent purity so it can be processed through the sugar end of the factory, similar to thick juice, to produce granulated sugar.

The simple steps shown in the diagrams have been automated into a continuous loop, adding molasses and water and taking out products continuously without having to stop. The system can be run for six months or more without having to stop. The normal plan for operations is to run all through the beet campaign while storing the concentrated extract in a large storage tank capable of containing the equivalent of about 35,000,000 pounds of granulated sugar in liquid form. When beet slicing is complete, the factory continues running the sugar end to process the extract into granulated sugar and extract molasses. This adds about three weeks of operation to the sugar end at the end of the campaign. Desugarization continues to run during the intercampaign period, processing additional molasses



that was saved in molasses storage tanks or brought in from other locations, to fill the extract storage tank. This extract is processed during a three-week period prior to the start of beet slicing operations. So, in all, the sugar end operates

an additional six weeks per year to produce an additional 750,000 cwt of sugar from molasses. Maintenance on the desugarization equipment is usually planned for a six to eight week shutdown during the summer months. 🌱

# NEW PILER DESIGNS



(Top): The rotary drum measures 20 feet long by 6 feet in diameter. An arrangement of 1-1/8 inch round steel rods were welded on the inside of three equally spaced circular channel irons. The rods are spaced at 1.5 inches apart to allow extraneous materials to be removed while the sugarbeet is gently tumbled and transported through the drum.

(Bottom): The parallel screen was developed based upon a new Art's-Way harvester design.

## DRUM-SCREEN BEET PILER



*Keith Kalso, Agricultural Manager, Croswell District*

A new piler design concept was fabricated and tested with very favorable results at Michigan Sugar Company's Dover receiving station last November. The design was developed to improve beet piler cleaning ability, beet pile storage, and increase the speed of unloading trucks.

The system has the capability to work in many conditions ranging from dry to extreme mud. The speed of the piler can also be changed quickly, as harvesting conditions change, to allow for optimal cleaning. The new system also has a much higher potential capacity than today's typical sugarbeet pilers.

The final design is a drum-screen that removes loose material while allowing the sugarbeet to pass through. The design is very simple, with minimal moving parts and bearings. This should reduce repair and maintenance costs. The drum was fabricated by Bernie Caron, Michigan Sugar Company Agricultural Mechanic at the Dover receiving station shop this past year.

The ultimate goal is to place the drum-screen into a conventional beet piler to improve cleaning ability and increase capacity. Plans are currently underway to install the drum-screen into a sugarbeet piler somewhere in the Croswell District. 🌱

## NEW GRAB ROLLS



*Dennis Monte, Agricultural Manager, Sebewaing District*

During the 2003 crop harvest, several growers in our area had the opportunity to try a new style harvester built by the Art's-Way Company. This prototype has a set of grab rolls that run parallel to the beet flow and do a great job of cleaning additional dirt and weeds from the beets.

As a result of that new harvester design, we decided to try a set of parallel grab rolls in a piler at Sebewaing. All pilers in Sebewaing have a set of rubber and steel grab rolls that run perpendicular to the flow of beets, after they come off the piler incline belt. We removed the perpendicular grab rolls and installed a new set of parallel, all-steel rolls. The idea was to see if this new system would remove more dirt and weeds than the old system.

When we analyzed the tare results from this new system, it appeared that we did improve dirt and weed removal; however, we had trouble restarting the new grab roll screen when it plugged and stopped. We had to completely remove the load of beets on this new screen, by hand, to be able to restart the piler. This coming year, we plan to install a new drive system on the parallel set of rolls so we will be able to restart the system without having to manually clean out the screen. 🌱





*Bob Hardy,  
Agriculturist,  
Bay City District*

Jurek Farms has been in business for over three generations. Tim and Richard began farming in 1977 under the leadership of their father, Stanley. They began with 1,000 acres, planting corn, soybeans, dry beans, and wheat. After a few years, they were looking for additional income and crop diversity, so they decided to grow sugarbeets and pickles.

Their first sugarbeets were grown for deer feed. In 1986, Rich and Tim signed their first sugarbeet contract with Monitor Sugar Company which consisted of 225 acres. In the 2004 crop year, they produced 530 acres of sugarbeets and have purchased 500 shares to grow sugarbeets in the Bay City district of Michigan Sugar Company.

Jureks have been aggressive in testing new ideas related to sugarbeets. They have participated in research trials in seven of the last ten years. They also have worked on methods to reduce soil erosion, including adapting cover crops and conservation tillage into their sugarbeet production system.



*(Left to right): Tim Jurek, Bob Hardy, and Richard Jurek.*

Today, Jurek Farms is comprised of 2,600 acres. They own about 1,100 acres and rent the remaining land from 24 different landlords. In addition to sugarbeets, they raise nearly 1,000 acres of dry beans, 200 acres of soybeans, 538 acres of corn, and 283 acres of wheat. Their work staff has grown from one part-time employee in the early 80s to three full-time employees in 2004. Stanley was a major contributor until about the mid-90s when he decided to start his retirement and enjoy some fishing; however, he is still a parts runner, a good sounding board, and still has advice for the boys when the unexpected happens.

Rich, 51, is married and has two daughters. He is responsible for all of the planting, bean harvesting, labor, grain storage, grain marketing, landlords, employee relations, and the office work. Tim, 46, divides his time between spraying, fertilization, field preparation, grain harvesting, sugarbeet harvesting, maintenance, and machinery purchases. Rich and Tim use a farm consultant whom they have found to be very helpful when making the decisions for the future. The Jureks use all of the tools available to make their farming operation a success. 🌱





*Wayne Davis,  
Agriculturist,  
Gratiot County*

Moore Seed Farm, LLC, is located in northeast Clinton County, near Banister, Michigan. Alan Moore and his son, Ben, are the main operators of the farm along with Alan's wife Phyllis, who does all of the bookkeeping. Moore Seed Farm has produced seed for over 65 years. They raise 2,000 acres of seed soybeans, Wheeler rye seed, seed corn and sugarbeets.

The Moores started growing sugarbeets in 1999 for Monitor Sugar Company. They were interested in raising sugarbeets, because they were looking for additional rotation crops. In their first year in the sugarbeet business, they grew 150 acres and will be planting about 700 acres for Michigan Sugar Company in 2005.

In their first two years of growing sugarbeets they planted in 30-inch rows. Planting sugarbeets in 30-inch rows did not fit well with their seed corn planting, since they plant seed corn in 19-inch rows to achieve adequate pollination. They consulted with Monosem and had a new custom planter made to fit both operations. The new planter is spaced at 19-inch rows and is a total of 19 rows wide. When planting sugarbeets, they raise up one of the row units to plant 18 rows at one time. By planting sugarbeets in 19-inch rows, they have experienced quicker row closure, which resulted in improved weed control.



*Alan Moore (left) and Ben Moore (right), standing in front of their Ropa Maus reloader.*

To simplify harvest and reduce harvesting cost, they joined efforts with other local growers. Combined, they have a Red River harvester and a new Art's-Way harvester that are both set up to harvest six 19-inch rows.

There are no factories or piling grounds near Clinton County. To reduce transportation cost, and further improve their harvesting efficiency, they decided to purchase a Maus. A Maus is a machine that picks up beets from the end of the field, cleans, and loads them into the truck for direct shipment to the factory. This machine is capable of cleaning and loading beets up to 200 tons per hour. The Moores have agreements with their neighbors and Michigan Sugar Company to use the Maus to efficiently deliver beets directly to the Bay City factory.

Last fall was the first time they used the Maus. It was particularly challenging because they had to learn how to build a pile at the side

of the field so the Maus could pick up the beets and put them into trucks. They decided to first load beets into silage trucks which allowed them to build a pile approximately 25 feet wide by 8 feet tall. Pile length was determined by the size of the field. After the piles were completed, the Maus could then be used to pick up the sugarbeets.

Moore Seed Farm, LLC, is one of the seven founders of Great Lakes Hybrids, for which they still raise seed today. The seed business was started in 1937, by Alan's grandfather, George Moore, and his father, Robert. They grew small seeded grains and then expanded to include navy beans. In 1962, Robert grew his first field of seed corn. In 1965, Robert joined with six other farmer-producers to start Great Lakes Hybrids. Robert and Alan were in a partnership until 1988, when Robert retired.



# PRESSED BEET PULP



*By Paul  
Pfenninger,  
Vice President  
Commodities &  
Procurement*

During the 2003/2004 beet campaign, a total of 115,744 tons of fresh pressed beet pulp was sold to local area cattle feeders. Many dairy and beef cattle feeders took advantage of the availability of pressed pulp during our beet slicing campaign to feed directly or to bunker pressed pulp for use later in the season.

After beets are washed and sliced into cossettes, the cossettes are then loaded into diffusion towers where the sugar is removed from the beet tissue and “wet” pulp is produced. The wet pulp is then “pressed” to create pressed beet pulp with a moisture content

of 70 to 75 percent. The normal process is to then dry the pulp further to a moisture content of 10 percent and eventually make a pellet, which can be stored and used at a later date. Due to the increased cost of natural gas used in drying the pulp, we have made a concerted effort to make pressed pulp available to local cattle feeders. It is a win-win situation, because of the feed value in the pulp and the decreased dependency on high-priced natural gas to dry the pulp.

Pressed pulp fits very well into the daily ration, digests well, and is palatable to the cows. We are focused on producing a quality product which is readily available. If you have not tried our product, we encourage you to test it as part of your feed ration. If trucking or logistics are a concern, give us a

call and we will do our best to assist you.

Sugarbeet pulp has been recognized as a valuable dairy and beef cattle feed. It is highly digestible with good energy value, and it offers a good source of valuable proteins, minerals, and carbohydrates. Pressed pulp is an excellent material for ensiling because it contains enough easily fermentable residual sugars. Properly ensiled, pressed pulp contains more than 20 percent dry substance, an agreeable sour smell and holds its texture well.

Plan ahead and call our offices (989-686-0161) early if you want to be first in line. Your spring planting intentions can be altered if you incorporate pressed sugarbeet pulp into your rations. Pressed pulp is available from October through February. 🌱



# 4-H AND FFA

## 2004 SUGARBEET PROJECT AWARDS

### CARO DISTRICT

There were 41 participants in the Caro 4-H program this past year. The Tuscola Beetniks (Viola Bierlein leader) had 21, the Pioneers (Roy Knoll leader) had ten and the 4-Leaf Achievers (Carl Bednarski leader) had ten. Premier awards went to Ashley Bierlein, Becky Bierlein, Ryan Schian, Joe Bublitz, Nathan Bednarski, David Houghtaling, and Kristen Reinbold. The top honor of Prestige Grower went to C. J. and Mike Bednarski (parents Carl and Lisa), and Eric Houghtaling (parents David and Cindy). 🌱

### CROSWELL DISTRICT

The Croswell District held their 4-H and FFA Project Awards Banquet in Sandusky on January 10. There were 66 participants in this past season's project resulting in 13 Premier Award recipients and five Prestige Award recipients.

Those receiving Premier Awards were Scott Grekowicz, Heidi Grekowicz, Ashley Roggenbuck, Rita Gentner, Kurt Kirkpatrick, Amanda Kalso, Lisa Volmering, Bobbi Gentner, Michelle Keinath, Jillian Roggenbuck, Clint Balcer, Sarah Furness, and Teri Gentner.

Receiving top honors, Prestige Awards and recognition were Jared Puwalowski (parents Claude and Denise), Amanda Grekowicz (parents Chris and Michele), Travis Volmering (parents Dan and LaDonna), Andrew Gordon (parents Ken and Debbie), and Jesse Grekowicz (parents Chris and Michele). 🌱

### SEBEWAING DISTRICT

Michigan Sugar Company's Sebewaing Area 4H-FFA Beet Project Banquet was held on Monday, December 6 at the Immanuel Lutheran Church. This Banquet honored the 34 Beet Project participants from the Michigan Sugar Sebewaing District's growing area.

The three top members, Kirk Yackle (parents Jim and Shiela), Dave Maust (parents Clifford and Marie), and Chad Goebel (parents Wayne and Sheree), were given the highest honor of Prestige Growers. The next seven highest point achievers, Brittany Armbruster, Sara Smith, Jason Smith, Amanda Linzner, Bryce Armbruster, Tara Haag and Eric Sneller, received Premier Grower awards. 🌱

### CARROLLTON DISTRICT

The Carrollton District held its annual 4-H banquet on January 10 at the Trillium Banquet Center in Saginaw. This is the second year that the Breckenridge and Carrollton 4-H groups met as one group. After a delicious meal, the group was treated to a presentation recapping their summer field day. That was a day filled with agronomy at the Saginaw Valley Bean and Beet Farm. The 4-H group had many informative stops and were treated to ice cream from the M.S.U. Dairy. Premier award recipients were Justin Frahm, Eric Reinbold, Heidi Reinbold, Julia Schaeff, Allysa Brown, and Robert Wasmiller. Prestige award recipients were Luke Butcher (parents Kelly and Sherri), Coryn Weiss (parents James and Marcia), and Dana Albosta (parents Bruce and Lori). Everyone was thankful for the good year they had and for all they had learned. 🌱



*Members and families of the 2005 Sebewaing area 4H and FFA sugarbeet project on the summer tour at Greenfield Village and Henry Ford Museum.*



## 4-H Prestige Award Winners



*C.J. Bednarski*



*Mike Bednarski*



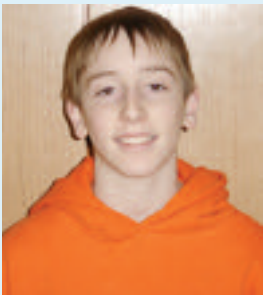
*Eric Houghtaling*



*Jared Puvalowski*



*Amanda Grekowicz*



*Travis Volmering*



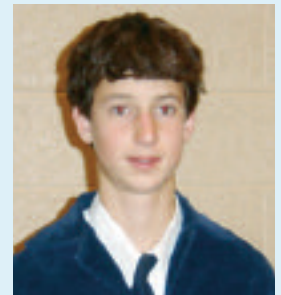
*Andrew Gordon*



*Jesse Grekowicz*



*Kirk Yackle*



*Dave Maust*



*Chad Goebel*



*Luke Butcher*



*Coryn Weiss*



*Dana Albosta*







# NEW BREED OF SHOWS HOW SW

*By Don Comis, ARS*

*This article is a reprint of an April 2004 issue from Agriculture Research, written prior to the Michigan Sugar Company and Monitor Sugar Company merger.*

J. MITCHELL MCGRATH MAY NOT SEEM THE MAN TO BE CAST IN THE ROLE OF A REVOLUTIONARY, BUT HE IS PART OF A "NEW GUARD" OF YOUNGER GENETICISTS AT A.R.S. LEADING A GENETIC REVOLUTION IN THE SUGAR BEET BREEDING INDUSTRY.

It began 10 years ago, according to Thomas K. Schwartz, executive vice president of the Beet Sugar Development Foundation of Denver, Colorado.

Schwartz says that this new guard brings the tools of molecular biology to sugar beet breeding for the first time—without necessarily using genetic engineering—allowing a look at how a sugar beet grows, down to the level of gene molecules. He cites McGrath, in ARS' Sugarbeet and Bean Research Unit at East Lansing, Michigan; Leonard W. Panella at Fort Collins, Colorado; and John Weiland at Fargo, North Dakota, as examples of sugarbeet scientists ushering in an era of faster, gene-based sugar beet breeding.

Under a long standing Memo of Understanding (MOU) with USDA, first signed in 1943, the Beet Sugar Development Foundation provides germplasm, research assistance, and funding for McGrath, Panella, Weiland, and a handful of other ARS geneticists



# BEET GENETICISTS EET IT CAN BE

from Maryland to California who are mapping the sugar beet genome. The ARS geneticists form the only public breeding group in the United States and the only group in the U.S. and one of the few in the world working on the sugar beet genome. ARS shares all its data publicly.

Though half of American's sweet tooth cravings—and a third of the world's—are satisfied by beet sugar, Schwartz says the sugar beet industry is a small one. Since it's considered just a "minor" specialty crop, the foundation represents all but one small sugar beet seed company in the world, with four members, all overseas.

## USDA'S LONG-TERM RUNNING AGREEMENT WITH INDUSTRY

The foundation acts as a research arm and umbrella organization for its member companies. The MOU that's evolved over the years charges ARS with developing basic germplasm lines and releasing them to the foundation, which distributes them to member companies.

"Our companies are best suited for commercial development," Schwartz says. "But what they're not suited for is the type of genetic program McGrath and his colleagues around the country are working on. That is very specific, and expensive, research." It recently yielded about 20,000 sugar beet gene indicator tags—Expressed Sequence Tags (ESTs)—which represents some, but not all, of the 30,000 genes thought to make up the working part of the genome. *About 3,000 ESTs were contributed by McGrath's lab, the rest from cooperators overseas.*



*(Left): Shallow grooves of an SR96 smooth-root sugarbeet (left) and a traditional sugarbeet. The smoother roots do not harbor as much soil when harvested and can cut soil disposal costs in half.*

*(Far left): Geneticist, Mitch McGrath, examines sugarbeet plants grown for rapid seed production and accelerated breeding of recombinant inbred lines.*

## A GROWING LIBRARY OF GENES

The latest project funded under the MOU calls for screening the sugar beet gene library using another new tool, a Bacterial Artificial Chromosome (BAC) library. McGrath explains that a BAC library uses safe strains of *Escherichia coli* bacteria to store sugar beet DNA. These sequences are then either screened with genetic markers, or compared with sequences of known genes, to connect them with possible traits. The same thing is done with ESTs. McGrath began with sugar beet DNA he prepared with Weiland, and worked with a contract firm to assemble the library. Each clone in the library of 38,400 cloned bacteria stores a different DNA sequence from the sugar beet's genome.

"We chop up sugar beet DNA and connect segments to bacterial

plasmids that carry the DNA into *E. coli* bacteria," McGrath says. Schwartz explains that member seed companies can then either buy cloned copies of the living bacterial library or DNA samples on filters, as two have already done, or they can rely on McGrath or the contract firm to do the work. They compare their germplasm's DNA sequences with those in the library to identify the traits—or at least chromosome location—associated with each DNA sequence.

"This is an important first step to create order in these early days of sugar beet genome mapping," says McGrath. "We don't have a common language for any of a sugar beet's nine chromosomes."

## BUT WILL IT SPROUT?

Schwartz says that seedling emergence is one of the most

# NEW BREED OF BEET GENETICISTS SHOWS HOW SWEET IT CAN BE (CONT'D)

important traits to sugar beet growers everywhere. He was at McGrath's first industry meeting after arriving at East Lansing in 1996 and saw him bombarded with requests for help on emergence. As one grower put it, "If we don't get it out of the ground, it's no good to us."

"McGrath put his nose to the grindstone," Schwartz says, "and quickly came back with several solutions: a simple test for the emergence trait, which he gave to the foundation, along with two possible genetic markers for seedling emergence and vigor. His test for emergence has already led to commercial varieties with higher germination rates."

He developed it by growing seeds in pure water, which is comparable to the multiple stresses that seeds encounter in the field. Previous tests didn't reflect field stress, but McGrath's gives a

true reading on how seeds will perform there.

His possible genetic markers promise to help identify and locate the emergence genes on the sugar beet chromosomes, one of the goals of the sugar beet genome project.

Paul Pfenninger, vice president of agriculture for the Monitor Sugar Company in Bay City, Michigan, explains that farmers' greatest concerns are pretty much for the seed to sprout and the seedling to survive the first month—what's called "seedling vigor."

"One of the many unique things about sugar beets as a crop is that is that only about half the seeds planted actually sprout," says Pfenninger. "And those that sprout become tiny, weak seedlings that are exposed to everything in the field—from soil crusting to insects to disease to strong winds. If you get a 40 mph wind that first month,

it could wipe out a third of your seedlings. They're too delicate to withstand the sandblasting caused by strong winds carrying dirt particles with them."

But disease is the main threat to seedlings. Sugar beet farmers grow other crops—mainly corn, soybean, and wheat—because they can't grow sugar beets in the same field 2 years in a row. They have to wait at least three years before replanting sugar beets, for fear of disease buildup.

McGrath's team at East Lansing consists of two technicians and three graduate students. One graduate student developed a new test for *Aphanomyces* seedling disease and used it to show that there are two genes needed for resistance, and his newest graduate student is examining sugar beet germplasm to develop ideas that could help in breeding for rhizoctonia seedling disease. The third

*Technicians Tim Duckert, Teresa Koppin, and Robert Sims (left to right) harvest sugarbeets and test sucrose content simultaneously. Koppin is performing the sucrose analysis.*





student is looking at plant development, and has found that the sugar beet plant radically alters its expression of a host of genes at about the same time that rhizoctonia resistance begins in growers' fields.

### HOW SWEET CAN IT BE?

Pfenninger says that after emergence and survival, the main concerns are of yield and sugar levels. McGrath has found a possible genetic marker to predict beets with high sugar content when they're only about 7 weeks old, instead of waiting for their full growth in about 25 weeks.

He and his colleagues theorize that maybe the sugar beets with the highest sugar content aren't better at storing more sugar, just better at keeping its concentration high by letting less water in. McGrath and others had observed that beets with the most sugar tended to be smaller and less watery.

Pfenninger appreciates McGrath's intense curiosity about sugar beets. Having worked for Monitor since 1978, he understands the value of having people like McGrath's team on his side—scientists on the cutting edge of technology, but still accessible and connected to the real world of sugar beet growing, processing, and marketing.

He sees McGrath and his genetics program as a fresh boost to the industry. "I was impressed by his enthusiasm and how he jumped right into the work," Pfenninger says. "He's visible at farmer and industry events, always listening to our concerns."

Monitor is almost the only private company left processing sugar

beets, because the industry is only as strong as the crop and prices allow. As a minor crop, sugar beet growing and processing is a marginal business with little room for error. For one thing, companies don't manufacture many pesticides for this crop. And Pfenninger has watched almost every other private beet sugar processing company collapse, sold to farmers who organized co-ops to save their local markets. A recent string of years with 30-year-low prices speeded up the process.

### HOW SMOOTH—AND HEALTHY—CAN IT BE?

Another major industry concern is the tendency of mud and dirt to stick to sugar beets at harvest, embedded in natural ridges. While processing shakes loose as much dirt as possible before weighing the beets, growers must truck the dirt back to their farms. This not only burns diesel fuel, but can also spread diseases to other farm fields as dirt is moved from field to field.

And dirt that comes off later in the processing costs the industry a lot of money. Monitor spends from a half to three-quarters of a million dollars each year to dispose of the soil in specially created storage ponds and to dredge the ponds when they get too full. Pfenninger sees the problem as one that will loom larger for the industry over the years.

Monitor worked with McGrath's team to develop new sugar beet germplasm with smooth, ridgeless roots that will reduce soil loss—and disposal costs—by about half. They're

now incorporating resistance to rhizoctonia and other diseases into this smooth-rooted germplasm. Working with Bob Lewellen, an ARS geneticist at Salinas CA, they've already released a sugar beet line that combines smooth roots with high sugar content and resistance to rhizomania, a disease that appeared in Michigan for the first time last year.

That germplasm release—done without molecular genetic tools—is symbolic of future releases envisioned: custom-designed sugar beets with more and more of what industry wants "built" into them. They will be assembled by a new kind of breeder pulling genes on the farmers' shopping list off the "library shelf," one at a time, and combining them, using traditional plant breeding, into new lines. Those will be the eventual payoff of the genetic revolution. In the meantime, McGrath and his colleagues will continue to release better and better sugar beet germplasm—and better tools for breeders. 🌱

*This research is part of Plant, Microbial, and Insect Genetic Resources, Genomics, and Genetic Improvement, an ARS National Program (#301) described on the World Wide Web at <http://www.nps.ars.usda.gov>.*

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# BIOTECH UPDATE

## MAKING BIOTECH BEETS A COMMERCIAL REALITY



*By Luther Markwart,  
Chairman,  
Sugar Industry  
Biotech Council*

As a ten-year-old, standing under the hot sun hoeing weeds out of half-mile long rows of sugarbeets in 1964, I had plenty of time to daydream about great inventions for eliminating the need to do what I was doing! While weed "vacuums" and weed "magnets" never quite made it to the drawing board, I was overjoyed to see that someone figured out weed "electrocution," which brought deserved justice to those weeds that had escaped every other form of eradication. My personal view has always been, any person or company that could kill weeds in beets was, without question, worthy of a Nobel Prize. The introduction and improvement of our current herbicides have been a blessing to us and without them there would not be many farmers on the land today. Getting optimum effectiveness from our existing chemicals is one of the greatest challenges in growing our crop. As farms expand and farmers consolidate, you have to cover more acres in the same amount or less time. As one of the few professions where weather dictates your daily work plan, longer application windows and fewer trips across the field are essential to the future of our industry.

It is with this history and attitude that I am tremendously excited about our industry's efforts to bring Roundup Ready sugarbeets

to market. The U.S. sugar industry has created the Sugar Industry Biotech Council (SIBC). A small group of representatives of growers, processors, nutritional experts, seed companies and technology providers in the U.S. and Canada are coordinating our efforts for a smooth transition to this technology. From your region, we are very fortunate to have Michigan Sugar's President and CEO, Mark Flegenheimer, and Co-op Board Member, Brian Fox (Ontario) serving on this committee and Art McClintic from Alma serves as a Michigan grower spokesman.



As a result of the SIBC's well-coordinated and persistent efforts across our industry, approval and commercialization continues to move forward at an ever-increasing pace. The global Roundup Ready sugarbeet product received approval (glyphosate herbicide label and tolerances established) from the EPA in 1999, approval by the Food and Drug Administration in 2004, and we are now in the final stages of the USDA review process with the public comment period having concluded on December 20, 2004. Every sugar-beet grower organization, along

with many others, called for approval of this technology. It will now take an additional six to eight months for the comments to be reviewed prior to final approval, which is expected from the USDA in mid-2005. This will bring to a conclusion the U.S. regulatory process for deregulating Roundup Ready® sugarbeet seed. Once the technology for sugarbeet seed is deregulated, the industry will be able to proceed with larger commercial scale trials and begin to commercially produce seed in the varieties most desired by growers. At the same time, the regulatory process is continuing to move forward in Canada and Japan with approvals for production and importation, respectively, anticipated to conclude in 2005.

The Sugar Industry Biotech Council will be engaging with our sugar marketers and customers regarding the use of this new technology in sugarbeets. Given that we do not sell sugarbeets, but rather the refined sugar from the beet, the SIBC has already had the nation's best sugar research laboratory test the sugar derived from Roundup Ready sugarbeets for comparison to sugar from conventional beets. The results clearly demonstrated there is absolutely no difference between sugar derived from traditional sugarbeets and Roundup Ready sugarbeets, therefore, customers can rest assured they will continue to get the same pure, high quality sugar that we have been providing for over a hundred years. Furthermore, consumer products that contain corn, soy, canola, cotton, or milk



ingredients, in many cases, already contain ingredients derived from biotech crops or dairy cows; therefore, safe consumption of biotech products in U.S. and other markets is already well established.

There is still a great deal of work to be done, but our Sugar Industry Biotech Council is working aggressively to bring this technology to market in order to remain

competitive. During the 8th World Sugar Farmers' Conference in Fargo, North Dakota, last summer, we learned that Brazil has perfected biotech for their sugarcane and they have the capability to bring it into production in the very near future. Other major world sugarcane producers and exporters, like Australia and South Africa, are also leading the way in biotechnology for sugarcane.

It is an indisputable fact that the sugar world is moving in the direction of biotechnology and, once again, American farmers are leading the way. We must move forward expeditiously to meet the challenges in the field and in the market. I am confident that we will succeed in this effort and assure you that we are trying to get it in your hands as quickly as possible; but all good things take time. 🌱



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SUGARBEET SEED  
ACH SEEDS

Springtime, summertime and harvest time, your Crystal sugarbeet seed sales team is there for you. We stand ready to meet the ever-changing demands placed on your operation and the sugarbeet industry. As the emerging force in sugarbeet seed, we've met these demands and today we've fully grown into the company that you've come to count on for great service, strong variety performance, and high quality seed.

**Sunup to sundown - we'll be there.**



*By Ray VanDriessche,  
Director of Community Relations*

A long-standing tradition of Michigan Sugar and the former Monitor Sugar has been their commitment to contribute charitably to their neighboring communities. This philanthropy is based upon criteria which will benefit as many individuals as possible in a community.

An annual contribution is given to the United Way, an organization that directs donations where they are needed the most. United Way supplies food pantries of many local churches that provide assistance to those in need on a daily basis. This is especially true around Thanksgiving, Christmas and Easter, when churches are assembling their food baskets so the less fortunate will have what it takes to provide an enjoyable holiday for their families.

The companies have donated considerably to the Michigan Harvest Gathering, a State organized program which provides food for the needy. Also, much sugar was donated to churches, food pantries and other organizations that feed the hungry. Other contributions were made in connection with Special Olympics, Salvation Army, YMCA, Boys and Girls Club, Camp Fish Tales, Hospitality House, Cystic Fibrosis Foundation, Run For Life, Outreach, Big Brothers and Sisters, War Veterans, Crime Stoppers, and other various organizations.

Michigan Sugar Company feels strongly about supporting our youth through education, beginning

at the second grade level all the way through to the college level. At lower grade levels, there is a program which uses a "Bernie the Beet" coloring book which teaches elementary students about our industry. This coloring book walks through the various stages from planting the beet seed to making sugar and is illustrated in pictures that are very easy to understand. Additionally, the company sponsors a number of scholarships to promote higher education of students from the areas where sugarbeets are grown and processed.

We seek to promote education and interest in sugarbeets as well as leadership through the 4-H and FFA Sugarbeet Project in the sugarbeet producing areas of Michigan. Participants in this program learn through exhibits at a county fair and completing an accurate record of sugarbeet production practices. Our own Board of Directors Treasurer, Chris Grekowicz, was a graduate of that program and was a recipient of one of our scholarships nearly 25 years ago!

Being part of a community also means supporting its local festivals and arts activities, such as the Bay City Players, Saginaw Art Museum, Sebewaing Sugar Festival, the Octagon Barn, the Croswell Swinging Bridge and many others. The company has also participated in and supported such events as local fairs and parades, as well as fundraisers for police and fire departments.

So what does all this mean? Michigan Sugar Company has a commitment, not to be just a business in a community, but rather to be an active and participating member of the community. Simply said, we want to be a good neighbor in the communities where we do business.

*Steve Hannah and  
Katie Jacobs making  
cotton candy at the  
2005 Frankenmuth  
Snowfest.*







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## PIONEER NEWSBEET

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