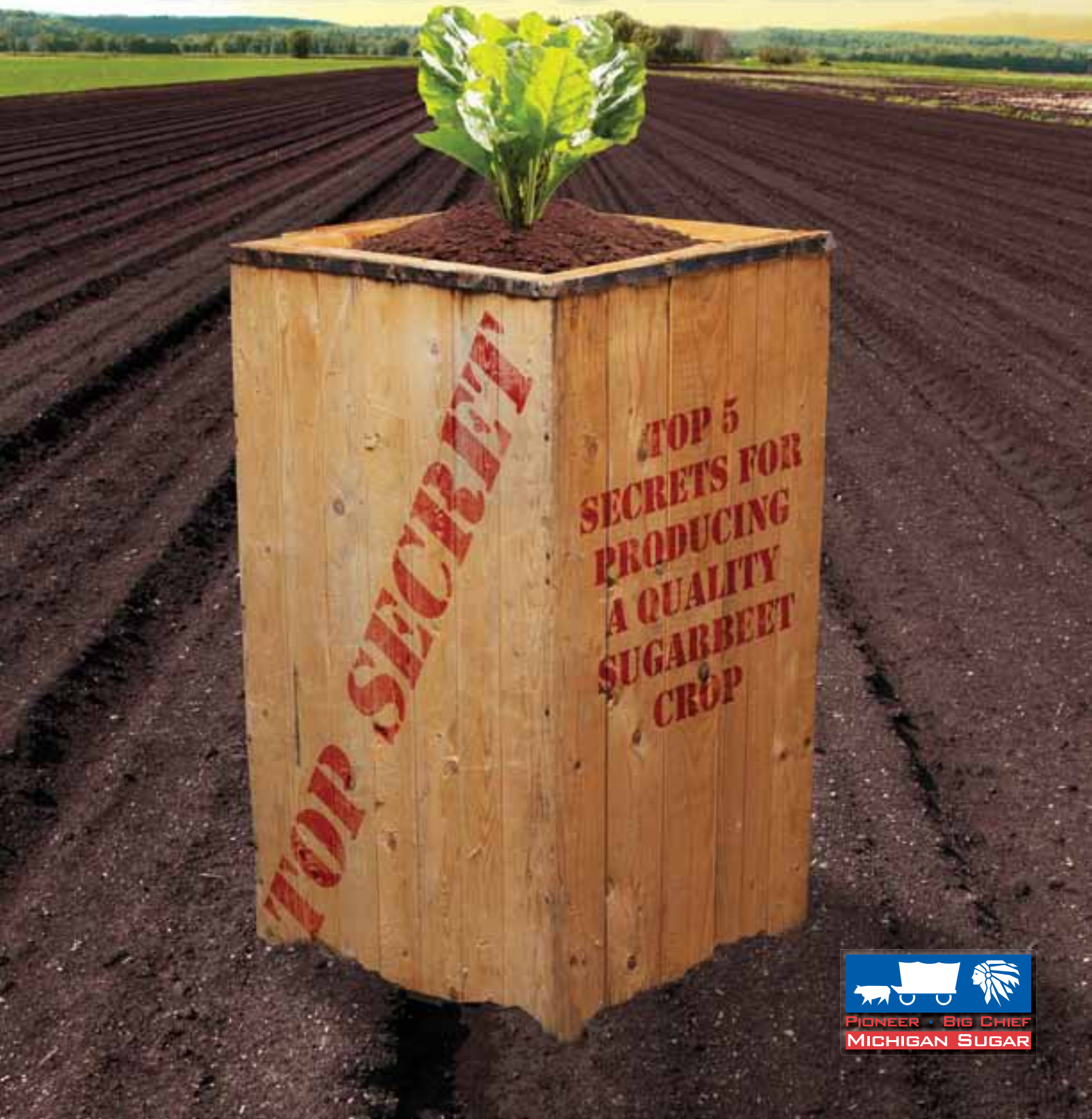
MICHIGAN SUGAR COMPANY • WINTER 2012-2013

THE NEWSBEET



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THE NEWSBEET

WINTER 2012-2013 • VOLUME 27, NO. 1

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Root of the Business

by Mark Flegenheimer, President and CEO

The "Secrets" of Our Success

In 2012, our shareholders delivered the highest yielding and one of the highest quality crops in our history. Why was last year's crop so bountiful? What are the "secrets" to growing and harvesting a high quality crop? There are many, many aspects to producing an excellent crop of beets, but in this issue of *The Newsbeet* we are highlighting the five most important practices growers must incorporate in order to be successful. This list is by no means all encompassing, rather it puts a spotlight on five of the most important decisions and actions growers should make in order to maximize quality.

Growing a high quality crop has numerous benefits. Most importantly as quality increases so does the Co-op's revenue, which means more money is paid to our shareholders. The impact is quite astonishing. If growers deliver 4.3 million tons with an 18.2% sugar content versus the same tonnage at 18.7%, that translates to an additional 350,000 cwt. of sugar or nearly $12 million of income! Almost all of that increase would be passed along to our growers in the form of a higher beet payment.

In addition to a higher beet payment, excellent quality sugarbeets improve numerous other facets of our business. High quality beets store better after harvest. Beets that are free of disease are healthier and do not deteriorate as rapidly as low quality sugarbeets when piled. Also, a beet with superior purity and sugar content processes more efficiently. Extraction rates increase as quality climbs while the cost to remove impurities diminishes.

As a cooperative, all shareholders should strive to grow and deliver the highest quality crop possible. Inside this issue we discuss the importance of these five "secrets":

- Proper selection of seed varieties.
- Early planting is critical.
- Stay in tune with the latest research.
- Maintain quality harvest practices.
- Pay closer attention to recommendations and stay in touch with your agriculturist and our research staff.

Each year, growers face new and unique challenges raising beets. Weather always influences the ultimate outcome of the crop; however, growers who consistently implement the five "secrets" always come out on top.

Growers are encouraged to consult with our agricultural staff as they strive to maximize the quality of the crop they will plant, grow, and harvest in 2013. I am confident that with all growers trying to increase quality, we will eclipse the impressive results we achieved this year.

Crop Update

by Paul Pfenninger, Vice President of Agriculture

Sweet Success: 2012 Crop Year Summary

"From start to finish, it was a record-setting year! It all started with our first field of beets being planted on March 15 and finished with the last load being delivered in the early hours of November 30. What a crop!"

The early spring planting season is being credited for some of our record-setting yields. We had 98,000 acres, or approximately 60% of the crop, planted under ideal conditions in March. It did not take long for the remaining acreage to be planted. By the middle of April, all fields were planted and we were seeing very good emergence on the March planted beets. Our previously high mark for March planted beets was 25% in 2010. The norm is just a few thousand acres, or less than 3% of any previous crop year.

The month of May arrived and the stand counts, on most fields, were "the best ever". How much potential did this crop have? Could we sustain the optimism over the entire crop year? The answer is yes.

Our normal stand count over the previous four years was 176 beets per 100' of row. The average for this year was 200, which is 20% better than our historical average. Excellent stand counts led to early row closure which added more value to the crop.

June arrived and the once "beautiful" crop was being stressed by the lack of precipitation. Some fields were showing signs of moisture stress and lying flat during the peak hours of the day. The dry soil conditions, coupled with above normal temperatures, temporarily changed the optimism of this once "unbelievable" crop.

On August 10, everything changed again. The West District received anywhere from 3.0" – 10.0" of rainfall; the Central District recorded a more moderate 2.0" – 5.0" of rain while the East settled in with 1.5" – 3.0" overall. It was a bit much in some areas, but largely, a well needed dose of precipitation. Soil moisture was replenished and now our attention turned to harvest.

Harvest started on August 20 in the Croswell District. Sebewaing and Caro started one week later on August 27 and Bay City followed on August 30. The Bay City slice date was late, but very aggressive anyway, due to massive capital projects that needed to be completed before they could even think about starting slice.

Our scheduled early delivery continued until October 20 when we opened delivery for long-term storage. Unfortunately, warm weather arrived two days later, and we were forced to stop harvest for five consecutive days. Over the five-day stretch (Oct. 22-26), the daytime average high temperature was 73° with the record high of 78° being set on October 25! We returned to harvest on October 27 only to be rained out by Hurricane Sandy on October 30. The two-day rain event kept us out of the field again until November 4. At that time, the calendar date was starting to be a real concern. We were only 49% harvested and we were well into the first week of November. We were very fortunate to avoid any severe nighttime temperatures and harvest began to wind down by mid-November. The last load of beets was delivered on November 30, 2012.

The 2012 sugarbeet crop will truly be a crop to remember.

2012 CROP YEAR SUMMARY	
Harvested Acres	162,611
Tons Per Acre	29.22
Final Tons	4,751,048
% Sugar	18.66
Purity	95.50
RWST	279.44#

A Great Harvest!

Amity Technology was a proud partner of many hardworking farmers during the 2012 harvest. Thank you for trusting your harvest to defoliators and harvesters from Amity Technology. Our field-proven designs work well in a variety of conditions. Engineers at Amity Technology continually improve design and efficiency, resulting in equipment that holds its value. Further, Amity Technology is unmatched in company and dealer commitment to quality, parts availability, and service.

Amity Technology is the world leader in sugar beet harvesting equipment. Because of its high quality and low maintenance requirement, it's the safe choice today for tomorrow.

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Digging up the Dirt on the Farm Bill

by Ray VanDriessche, Director of Community and Government Relations

In the 11th hour of the fiscal cliff budget negotiations, both versions of the farm bill that were drafted by the Senate and House Agriculture committees in 2012 were rejected and an extension of the 2008 Farm Bill was implemented. The extension disregarded extensive efforts by the Agriculture Committees to align the new farm bill with the current agricultural environment and save billions. The extension also resulted in the requirement to start the farm bill process over in the 2013 fiscal year budget negotiations. Some Washington insiders believe the goal of the 113th Congress would be to cut the overall farm bill budget in the range of $27-35 billion.

After expressing their frustration with the farm bill extension, Senator Debbie Stabenow, Chair of the Senate Agriculture Committee, and Congressman Frank Lucas, Chair of the House Ag Committee said they will waste no time in starting the process over again. With only a nine-month extension of the farm bill in place, they hope to use the 2012 drafts as a starting point for discussions. Their goal is to have a new draft ready for consideration by early summer with final passage by September when the extension expires. Majority Leader Harry Reid included the farm bill as a priority in the top ten bills introduced by the Senate.

In the last Congressional session, six anti-sugar amendments that were introduced to strip out the major components of the sugar provisions in the farm bill were defeated. Starting the farm bill process over has re-energized the users coalition who will take the opportunity to ask legislators who represent large sugar users in their districts to re-introduce anti-sugar amendments. Sugarbeet and sugarcane growers from across the nation will be back on Capitol Hill in early March visiting with legislators in an effort to defeat any anti-sugar amendments that may be introduced.

Senate Ag Committee Chair Debbie Stabenow, a long-time supporter of Michigan farmers, wants a strong new Farm Bill approved by Congress — which is proving to be no small task.

Trade Talks and PAC Participation

Impact of 2013 Trade Agreements

The Obama administration has made it clear that they would like to finalize a number of trade agreements in 2013, if all the interested trading partners can come to an agreement. The belief is that increasing trade is a major tool in bringing the fiscal budget back in balance through U.S. exports. As a result, the United States Trade Representative (USTR) staff is working on multiple trade agreement negotiations at the same time. Many of the countries involved in the discussions would like to have access to additional imports to the U.S. market for their sugar. Consequently, U.S. sugar industry representatives are monitoring the negotiations closely and expressing the industry's concerns to USTR as the trade talks progress. While USTR is very committed to completing the negotiations, they have stated that "no deal is better than a bad deal."

Trans-Pacific Partnership (TPP): Trade negotiations continue with a number of new countries requesting to become active trading partners in the discussions. Mexico and Canada were allowed into the TPP in September and, as one of the largest sugar exporters in the world, Thailand has also indicated that it would like to join in the discussions. There is no clear indication at this time if Thailand will be allowed to join in the negotiations.

Trans-Atlantic Free Trade Agreement (TAFTA) – the U.S. and EU Market: Although there is no formal timeline set to begin discussions, the Obama Administration is moving forward with plans to negotiate a bilateral Free Trade Agreement (FTA) with the Europeans.

The World Trade Organization (WTO) negotiations are still on life support, but some are trying to breathe new life into the talks with Russia as a new partner in the discussions.

With unlimited access, imports from Mexico continue to have a major impact on the U.S. sugar market and over a million tons are expected to be shipped into the U.S. again in the 2012–2013 marketing year. Sugar industry representatives, from both countries, continue to meet periodically throughout the year in an effort to work with each country's government to keep the North American sweetener market in balance. Improved Mexican sugar market data, now being shared with USDA by both the Mexican government and industry, will allow for more accurate decisions when USDA is assessing the need for additional imports of sugar onto the U.S. market.

The Great Lakes Sugarbeet Growers PAC

Grower-shareholders are to be congratulated for supporting their PAC fund at a participation level of 94% for the second year in a row. This level of participation signifies that growers realize the benefit of having the opportunity to educate our legislators and their staffers on the value of a strong domestic sugar policy. All growers and employees benefit from strong sugar provisions in the farm bill. We encourage and welcome all eligible grower-shareholders who are not currently supporting the GLSBG PAC fund to join in supporting the efforts of your fellow growers and employees.

"Hats off" to all who are currently participating in the PAC fund!

Playing Our Part in the Pure Michigan Campaign

by Jerry Coleman, Vice President, Marketing & Sales

If you are near our Bay City factory any day of the week, you will most likely see a bright, shiny Gordon Food Service (GFS) truck stopping by to pick up yet another load of sugar — grown and refined right here in the state of Michigan.

Michigan Sugar has been a long-term supplier to Gordon Food Service for various sugar items that include 50 lb. bags of granulated and brown sugar, 10 lb. bags of granulated sugar, and 2 lb. bags of powdered and brown sugar. We pack those items under the GFS label (a private label owned and distributed exclusively by Gordon Food Service). We are delighted that Gordon has decided to begin stocking our sugar packets in two of their distribution centers for resale to restaurants, hospitals, camps, and other feeding establishments in eastern Michigan.

Gordon Food Service is very supportive of the "Pure Michigan" initiative launched by the state of Michigan several years ago to showcase and promote products made right here in Michigan.

Pure Michigan began way back in 2006, when an advertising campaign was launched to market the state of Michigan as a travel and tourism destination. This campaign received state and international attention beginning in 2008, when then Governor Jennifer Granholm approved $45 million in additional funding for the Pure Michigan campaign — an unprecedented tourism budget for the state, allowing the Pure Michigan campaign to be broadcast on a national level beginning in March 2009. The state of Michigan has now expanded their promotional efforts to include the bounty of wonderful food products grown and produced right here in Michigan; and sugar is just one example of those promotional efforts.

Gordon Food Service has a proud heritage of being a Michigan-owned and operated business since 1897. The company was started in the Grand Rapids, Michigan area, where to this day it is still headquartered.

Four generations later, Gordon Food Service is the largest family-owned broadline foodservice distributor in North America — and one of the largest privately held companies in the United States.

At about the same time that Gordon Food Service was being established in the western part of our state, the antecedent to Michigan Sugar Company was being started in mid-Michigan. At that time, nobody could have predicted that our two companies would one day come together with Michigan Sugar Company being chosen by Gordon to pack their line of private label (GFS label) sugar products in packages ranging in size from tiny sugar packets to 50 pound bags.

If you look at the pictures on this page showing both the front and back of the Michigan Sugar Company packets that Gordon is now distributing, you will notice some very important words on the backside of the packet, "Made in Michigan," and "Locally Grown. Locally Owned." These are significant to not only our grower-owners, but also to Michiganders, because it signifies that this sugar was, indeed, locally grown and refined, AND that when feeding establishments choose either GFS labeled products or Michigan Sugar Company labeled products, their hard earned dollars were not sent to a foreign country where lots of sugar is grown, but rather those dollars stay right here in the local economy where we all work and live.

We encourage all of our employees, grower-owners, suppliers, and friends in Michigan to encourage the feeding establishments (including restaurants, camps, hospitals, schools, etc.) in their area to support "Pure Michigan," Gordon Food Service, and Michigan Sugar Company and our grower-owners by purchasing our sugar packets distributed by Gordon.

To order (or re-order) is quite simple. The establishment can place their orders by either speaking to their Gordon account manager, or by calling (800) 968-6474 to set up an order. To make ordering easier (and more certain), refer to "Reorder No. 195801" when ordering. By specifically referring to this reorder number, the establishment will be sure that they are ordering sugar grown in Michigan, refined in Michigan, and distributed by one of Michigan's finest companies.

Jerry Coleman is Vice President of Marketing & Sales at Michigan Sugar Company. He has been with the company since 1995, and has over 35 years of experience in the sugar industry.

Discover
the power to perform

Increase

- speed of emergence
- plant population
- yield

For more information on how you can benefit from this contact your Market Manager, Randy Hemb – Phone 1-989-297-9170

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TOP 5 "SEC

for Producing a Quality

Members of the Agricultural Staff were asked to submit their "top five secrets to producing a quality beet crop." The results are really not "secrets," but rather areas of beet production which we feel may separate the top grower from the average grower — paying attention to detail, as they say.

by Paul Pfenninger, Vice President of Agriculture

RETS" Sugarbeet Crop

The Agricultural Staff's "Top Five Secrets"

1. **Proper selection of seed varieties.** Varieties should be selected based on field history, with full knowledge of the pluses and minuses of each variety. Yield and sugar content are extremely important, but so is the disease package and one's willingness to provide proper seed protection and apply fungicides in a timely manner.

2. **Early planting is critical.** Being prepared for an early planting is a must. If soil conditions are proper, regardless of the calendar date, be prepared to plant. Percentage-wise, early planting produces the best tons and sugar for the growers and the Cooperative.

3. **Stay in tune with the latest research.** The top growers, in most areas, are always in tune. They seem to keep an open mind and are willing to experiment with new ideas. Allowing us to perform cooperative research on your farm may be a bit time consuming, but the results should be extremely beneficial since the trials are done "on my farm."

4. **Maintain quality harvest practices.** Producing a quality beet crop requires constant vigilance from planting until harvest. We must maintain the thought of quality during all phases of harvest. Defoliate your beets with your best effort. Proper defoliation produces better sugars and purities. Maintain proper harvester speeds for soil conditions, which puts less dirt in the piles for better pile storage.

5. **Pay closer attention to recommendations and stay in touch with your agriculturist and our research staff.** Agriculturists stay knowledgeable with the latest technology, the most recent research findings and the "happenings" of the entire beet crop via in-house communication. They can also give you the "heads up" needed to be ready and on time for any necessary action.

Bottom line, let your agricultural staff help you — challenge us to assist you and your operation in producing a top quality sugarbeet crop.

Please see the following nine pages for additional details on each of the above top five secrets!

Paul Pfenninger, Vice President of Agriculture, *has been with Michigan Sugar Company for more than 35 years.*

#1 Sugarbeet Quality Starts with Proper Selection of Seed Variety

by Steve Poindexter, Senior Sugarbeet Educator
Sugarbeet Advancement, MSU Extension

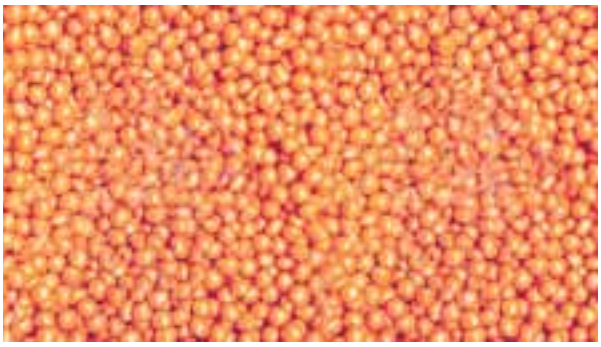
In the last few years, the REACh team has strongly emphasized the importance of selecting the correct varieties and placing them into appropriate fields. Variety selection has a major influence on sugar content, tonnage, and disease/pest resistance. In the 2012 Michigan Sugar Official Variety Trials, a total of 17 varieties will be offered for sale for the 2013 crop. It is very easy to see the difference in quality as measured by percent sugar and recoverable sugar per ton (RWST). In these trials comparing varieties with similar tonnage, there are genetic differences up to 1.6% sugar and 23 pounds of RWST.

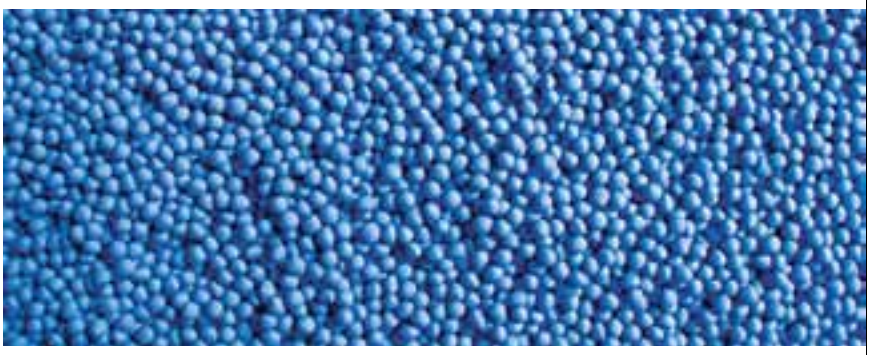
Sugarbeet variety selection, however, is more complicated than just simply choosing the seed with the highest sugar content potential and planting it in every field. Planting a variety with the wrong traits in the wrong field can spell financial disaster. Varieties also vary significantly in tonnage, pest resistance and emergence. Many of the high sugar varieties are also considered high maintenance and may require additional crop protection. Each variety has its own genetics that incorporate unique traits. Matching these traits with specific field conditions is extremely important. It is critical to know what issues have been present in previous years and the severity. Utilizing field history data from grower records is the perfect place to start.

Every year, two issues that can cause significant reduction in tonnage/quality are Rhizoctonia rot root and sugarbeet cyst nematode. Both of these diseases can impact yields up to 15 tons per acre. Fields with severe nematode issues can cause up to 2.2 percentage points sucrose loss. It is estimated that 25% of the Michigan sugarbeet acreage could benefit from nematode-tolerant varieties. Rhizoctonia, in severe conditions, can also reduce sucrose content up to 1.3%. Field history tends to be a good indicator of potential Rhizoctonia levels. Also, sugarbeets following soybeans will increase Rhizoctonia disease levels. When selecting varieties, growers need to keep in mind their level of Quadris usage; are they using an in-furrow and a foliar application, a single application, or no applications?

RESEARCH BREEDS CONFIDENCE

BETASEED®





Aphanomyces and root aphid can also reduce yield and quality. Varieties vary greatly in their genetic resistance to these problems. Aphanomyces can infect seedlings in warm wet conditions. Select more tolerant varieties and/or utilize Tachigaren seed treatment if this has been an issue in certain fields. All of our varieties have some tolerance at varying levels to root aphid. Root aphid tends to be mostly a problem during years of drought conditions. Growers should be careful to not be over-exposed to some of the poorer root aphid tolerant varieties.

Healthy leaves at harvest produce the highest sugar content. Cercospora leafspot left uncontrolled can easily reduce sucrose content by 2.1%. Current varieties vary greatly in leafspot resistance. Select varieties based on your willingness or capability of controlling this disease season long. Do not expect a known high sugar variety to be good in sugar if leafspot is left uncontrolled. Fields that are left uncontrolled not only affect you, but those neighbors who are in close proximity and Michigan Sugar Company as a whole.

Michigan State University – Sugarbeet Advancement and Michigan Sugar Company researchers conduct research trials to evaluate the positive and negative traits of each variety. The testing program is comprehensive and involves both small and field scale trials. Growers should thoroughly evaluate the research data before ordering seed. Each year the REACh Variety Trial Results are mailed to each grower. This comprehensive report includes all the data available on the varieties related to yield, quality and resistance traits. Remember, a one percent reduction in sucrose is equal to 15 pounds less sugar per ton. Based on a $65 per ton average payment, a 1% increase/reduction in sucrose equates to a value of $3.50 per ton. Time spent studying the trial results can be very profitable in selecting varieties.

***Steve Poindexter**, is the Senior Sugarbeet Educator with Sugarbeet Advancement, MSU Extension (Saginaw County). Steve has been the Director of Sugarbeet Advancement for 14 years.*

RESEARCH: TOP 5 SECRETS

#2 Early Planting is Critical

by Jim Stewart, Director of Research

Planting early and establishing high sugarbeet populations are critical steps in producing a highly profitable sugarbeet crop. Numerous research trials have demonstrated that early planted beets will yield from 1 to 10 tons per acre higher than later planted beets. Sugar content is also higher in early planted fields (Figure 1). Several factors contribute to the yield increases associated with early plantings. Sugarbeets planted early benefit from an extended growing season, which allows plants to capture more sunlight and produce more sugar. The amount of solar radiation in our area peaks in June and if we can achieve more canopy development earlier in the season, we can take advantage of more sunlight (Figure 2). We conducted a research trial in 2012 near Breckenridge with five planting dates (Mar 22, Mar 29, Apr 4, Apr 13, and Apr 24). The early planting dates had higher yields and sugar and also closed the rows much quicker in June than the later planting dates (Figure 3). Early planted fields tend to have fewer soil crusting problems, because soils dry slower with cooler temperatures. Early planted sugarbeets are often able to grow past critical stages when cyst nematode and damping off fungi attack young seedlings, because these pests need warmer temperatures to become active.

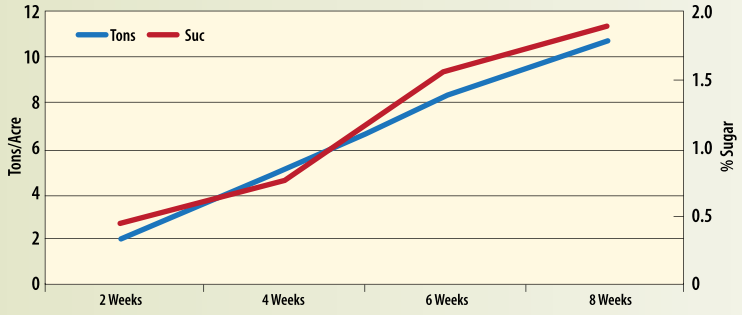
It seems that the prime planting time changes almost every year; however, sugarbeets planted the last week of March and the first week of April generally do very well. The graph in Figure 4 provides long-term weather data for the Saginaw area. On average, nighttime lows move above 30 degrees during the third week of March and the chance for precipitation is also decreasing. The best time to plant sugarbeets is after the chance of a hard frost is low and when the soil is fit to plant. Many fields were planted the third and fourth week of March last spring. Stands in those fields were excellent and we broke production records despite the summer drought. Early plantings and high sugarbeet populations really paid off in 2012.

Other factors must be considered in addition to planting date. The choice of seed (including seed treatments), seeding rate, applying nitrogen 2x2 at planting and applying Quadris in-furrow are decisions made at planting time that are important. Seed varieties should be tailored for your fields with resistant varieties in fields with serious disease problems, nematode varieties where needed and high producing varieties where you are capable of controlling diseases. Sugarbeet populations of 175 to 225 plants per 100 feet are recommended in 28 and 30-inch rows and 170 to 210 plants per 100 feet in narrow rows. American Crystal Sugar claims that in fields with sub optimum populations, each additional 10 sugarbeets per 100 feet of row will increase profits by $35 per acre.

Sugarbeets utilize most of the nitrogen in the first half of the season and 30 to 40 lbs of nitrogen per acre applied 2X2 at planting has provided the best results. The remainder of the nitrogen can be applied pre-plant incorporated or post emergence; however, for post nitrogen applications get it on early. Numerous trials have been conducted in Michigan evaluating Quadris applications in sugarbeets. In-furrow Quadris has provided the best overall Rhizoctonia control; however, foliar applications applied between the four- and eight-leaf stages also do a good job. We recommend a Quadris application on every field and two applications in fields where Rhizoctonia has been a significant problem.

Planting date is probably the most important decision that growers make early in the season. For each week that planting is delayed past the prime planting period, yields will drop by about 1-1/3 tons per acre and sugar levels will drop by about 1/4 point. Research information and past experience has demonstrated that planting early provides positive results more often than not. We all need to be prepared to plant when spring conditions are right to achieve top yields.

Figure 1. Yield Loss with Late Planting Dates*



*Averaged data from Michigan Sugar Company, Idaho, Wyoming, Nebraska and RRV trials

Figure 2. Daylight Hours by Month • Saginaw, Michigan

Long-Term Average

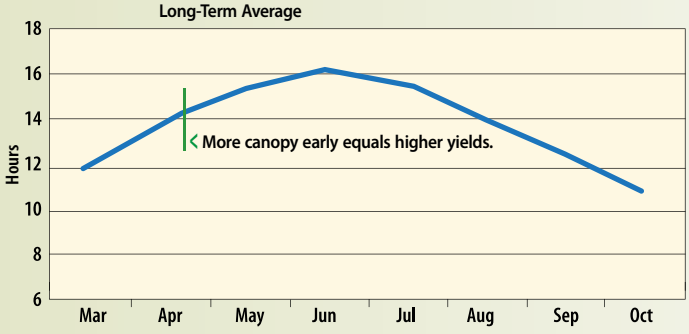
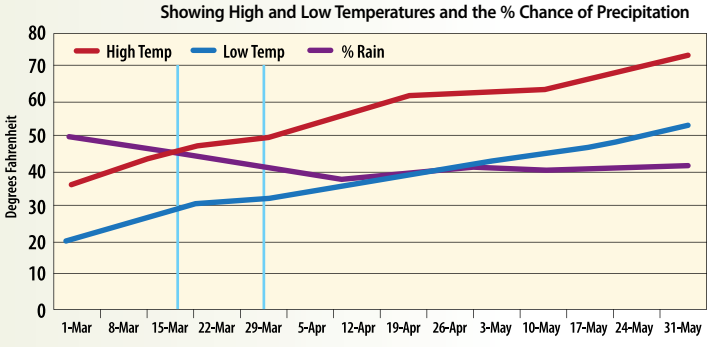


Figure 3. Sugarbeets From Planting Date Trial

Planting Dates: Mar 22, Mar 29, Apr 5, Apr 13 and Apr 24 (Picture taken in late May).

Figure 4. Long-Term Weather for Saginaw Area

Showing High and Low Temperatures and the % Chance of Precipitation



RESEARCH: TOP 5 SECRETS

#3 Stay in Tune with

by Jim Stewart, Director of Research

Strobilurin resistant Cercospora leafspot spores were discovered in a Michigan Sugar Company test plot near Elkton, Michigan, in 2011. Michigan sugarbeet growers began using Headline for Cercospora leafspot control in 2003. This new class of fungicides significantly improved the level of leafspot control from inception until resistance developed sometime around 2010.

Characteristics that make strobilurins such effective fungicides also make it possible for resistance to develop. Strobilurin fungicides are absorbed by sugarbeet leaves and move within the leaf to provide effective leafspot control on the upper and lower leaf surfaces. These fungicides are very good at preventing Cercospora spores from germinating; however, if the spores have germinated, they are not very effective at preventing mycelial growth and penetration of the fungus into the leaf. Because of this, strobilurins (Headline and Gem) need to be applied preventatively, before spots on leaves are formed.

Strobilurins are site specific fungicides, meaning that they control fungus in only one way. Strobilurins block a necessary pathway during mitochondrial respiration which stops the production of ATP (energy) needed by fungus cells to grow. To be specific, the strobilurin molecule binds to a site within the mitochondria called the Qo site (outside quinone oxidation site). This occurs within complex III of the mitochondrial electron transport system. The binding of strobilurins at this location prevents the flow of electrons between cytochrome systems b and c. ATP (energy) is produced as electrons flow through this electron transport system. The end result is that strobilurin fungicides prevent the flow of electrons and stop the production of ATP, which is needed for the fungus to survive. This is a fairly complicated explanation; however, if you think of the fungicide molecule as a key, and the binding site a lock, then visualize the key (strobilurin molecule) locking the door to cellular energy production.

Cercospora resistance to strobilurins occurs when a genetic mutation occurs that replaces glycine (amino acid) with alanine (amino acid) at site 143 in the cytochrome b complex. A single gene is responsible for this mutation. The resulting molecule is different enough from the original that the strobilurins no longer attach to the binding site and the fungicidal effect is lost. The key no longer fits the lock. After this mutation, strobilurins have no effect on Cercospora leafspot.

At first the mutated strain is a very small proportion of the entire Cercospora population. However, additional fungicide applications kill the susceptible spores and the resistant spores survive and reproduce. Over time the Cercospora population shifts from susceptible to resistant. The fungicides' activity weakens during this process until they are no longer effective.

There are two main types of fungicide resistance, qualitative and quantitative. Qualitative resistance is caused by a single gene mutation which quickly causes a complete loss of disease control. Strobilurin fungicides develop resistance in this manner. By contrast, quantitative resistance is a more complicated process and needs to have several different gene mutations occur before resistance begins. This multistep process takes much longer and an increase in the fungicidal rate often extends disease control for several years. Triazole fungicides (Eminent, Proline, Inspire and Enable) develop resistance in this manner.

Strobilurin resistance is widespread in Michigan

At the test site, in 2011, where resistance was discovered, Headline and Gem failed to provide control of Cercospora even though triazole fungicides (Eminent, Inspire and Proline) and Super Tin controlled Cercospora effectively. Leaf samples were sent to Michigan State University and to North Dakota State University for analysis and it was determined that the Cercospora spores were resistant to Headline and Gem. Before the end of the summer, over 100 leaf samples from around our growing region were sent to Michigan State for analysis and the vast majority were diagnosed as resistant to Headline and Gem (see Figure 1).

Research on Cercospora control was intensified in 2012. Five trials were conducted at Breckenridge, Blumfield and Elkton. Strobilurin fungicides failed to control leafspot at each of these sites while Inspire, Proline, Eminent and Super Tin provided good Cercospora control (see Figure 2 and Figure 3). The Ag Staff gathered additional leaves in 2012 and it is apparent that strobilurin resistance is widespread throughout our growing region (see Figure 1).

How and why did resistance develop?

1. As previously stated, strobilurin fungicides have a high risk of developing resistance, because they kill fungi with a single, very specific mode of action and a single gene mutation results in the formation of resistance.
2. Applying Headline on crops other than sugarbeets has likely accelerated the development of resistance.
3. Planting high yielding susceptible varieties has required more fungicide applications, which could have contributed to resistance.
4. By not rotating fungicide classes properly and by not tank mixing, we may have increased the chance for resistance.
5. Application methods that result in poor Cercospora control, including starting too late, stretching spray intervals, using low spray pressure or low water gallonage also puts more pressure on fungicides.

Basically, anything we do that diminishes Cercospora control will increase the chance for a mutation to occur. The probability of a gene mutation increases proportionally as the disease level increases. One spot on a leaf can produce 30,000 spores, so an infected field will have far more spores and a much higher chance for resistance developing.

We are not the first to experience strobilurin fungicide resistance. In the past 10 years, over thirty species of fungi have developed resistance to the strobilurin fungicides.

Can we prevent fungicide resistance?

There are several procedures we can follow that will extend the life of the fungicides that we rely on to protect the crop. Some practices may be inconvenient, some may be costly and most will involve trade-offs of some kind. For example, a high producing variety with poor disease tolerance has the yield potential to return an extra $200+ per acre, however, it is not advisable to plant that variety unless you are willing and able to control leafspot.

Resistance Management Techniques which will help delay or prevent the development of Cercospora resistance to fungicides:

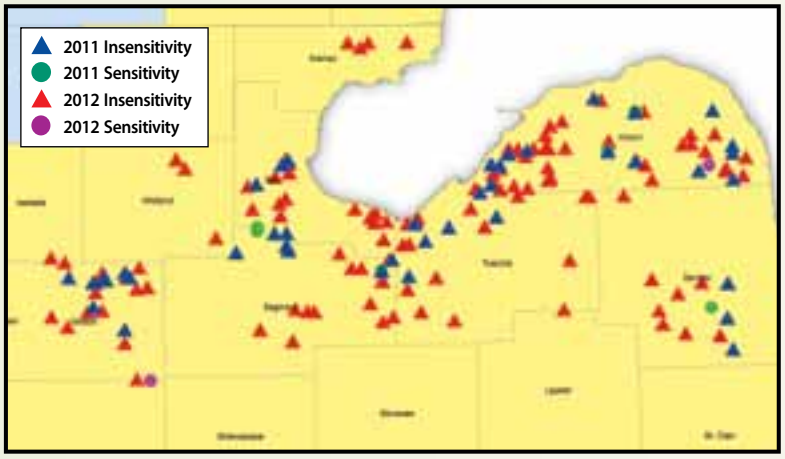
- Begin applications before spots are present
- Shorten spray intervals
- Alternate fungicide types
- No more than 2 triazoles or Super Tin applications per season
- Do not use back-to-back triazoles, even if they are tank mixed.
- Consider resistant varieties
- Spray susceptible varieties aggressively
- Tank mix fungicides
- Keep sprayer pressure and gallonage up
- Conduct a monitoring program
- Include protectants including Super Tin, EBDCs and Copper.

With strobilurin's failing, the triazole fungicides (Inspire, Eminent, Proline and Enable) will be our front line of defense against Cercospora leafspot. These products must be used responsibly or resistance problems with triazoles will also develop, leaving us with few choices. Triazole fungicides should not be used more than twice during a season and should always be tank mixed with an EBDC or Copper.

Triazole fungicides are absorbed by the leaves to provide control of Cercospora on the upper and lower leaf surfaces. In general, triazoles are more systemic than strobilurins, but do not move from one leaf to another. Triazoles need to be applied preventatively, before spots are present because they are not very effective at controlling Cercospora once an infection has occurred.

the Latest Research

Figure 1. Distribution of Cercospora-Resistant Spores in Michigan, 2011 and 2012



Qol Insensitivity and sensitivity 2011 and 2012, Michigan State University.

Figure 2. Percent Leaf Dessication

Michigan Sugar Company, 2001-2012

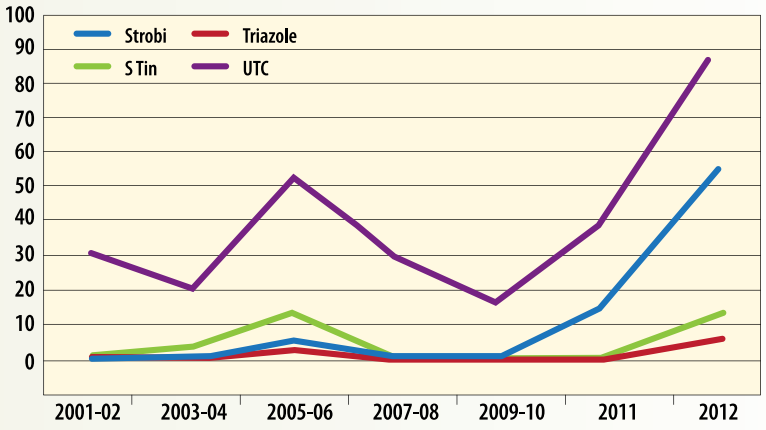


Figure 3. Test Plot showing lack of Cercospora leafspot control with strobilurin fungicide. Triazole treated plot is to the left of the strobilurin plot.

Triazoles control Cercospora by preventing the production of ergosterol, a key component of cell membranes. It is believed that triazoles act on a single site and it is known that several different gene mutations must occur for triazole resistance to develop. Triazoles follow the quantitative model for developing resistance, meaning that resistance occurs over a longer period of time and is not caused by a single gene mutation. The risk of resistance developing to triazole fungicides is significant — but less than for strobilurins.

Super Tin is classified as an organometallic fungicide and is a protectant type fungicide, meaning that it is not absorbed by the leaves but protects leaves from future infections. It will not provide leafspot control after leaves are infected. Super Tin has provided good Cercospora control in our trials when sprayed preventatively. Super Tin is not as effective as triazoles, but is much more effective than EBDC's and copper. Super Tin has multiple "modes of action" and has a relatively low risk for resistance developing.

Growers have been reluctant to use Super Tin because it is a restricted product and is more dangerous than our other fungicides. Inhaling the fumes (dust or fine droplets) is the main risk of poisoning; however, the product is used in other sugarbeet areas (without incident). It is important to wear the proper protective clothing and have a cab with the proper filter when using Super Tin.

Super Tin can be very useful as an alternative to triazoles in a resistance management program and needs to be a part of our leafspot control program. Without Super Tin it will be difficult to achieve adequate leafspot control and still properly rotate fungicide classes.

We are not aware of any new fungicides being developed for Cercospora control in sugarbeets. However, we are working with Michigan State University, Syngenta and Sipcam to secure a Section 18 registration for chlorothalonil (Bravo, Echo) in sugarbeets. Bravo and Echo are protectant type fungicides formulated as emulsifiable concentrates and have the signal word "Caution" on the label. Leafspot trials in sugarbeets have shown that chlorothalonil provides better leafspot control than EBDC's but is less effective than Super Tin. There is not a high probability of receiving a Section 18 label for the upcoming season.

Looking toward the future, we have reason for optimism. The high producing but poor Cercospora varieties that were approved when we began growing Roundup Ready® varieties are being phased out and replaced with better overall varieties. We evaluated 13 nematode tolerant varieties in 2012 and expect to have nematode tolerance with good disease traits within a few years and, for a long-term goal (maybe 10 years?), we are looking ahead to varieties with genetic Cercospora tolerance (GMO-Cercospora), a trait that seed companies continue to work on.

There should be no question now as to whether or not the fungicides that we rely on can develop resistance. We have seen it happen. We all need to follow leafspot control measures that will protect our crop while minimizing the risk of Cercospora resistance. Growers who plant susceptible varieties need to employ an aggressive Cercospora control program. Even relatively tolerant varieties need proper attention because when you get behind with Cercospora leafspot you cannot catch up. If resistance to the triazoles or Super Tin develops, we will be left with few options, and none of them good. So we all need to do our part if we are to continue growing a high quality and profitable sugarbeet crop. ■

***Jim Stewart**, Director of Research, coordinates the agricultural research activities at Michigan Sugar Company and specializes in weed, disease and pest control, soil fertility, and other sugarbeet production practices. He has been employed with the company for 14 years.*

RESEARCH: TOP 5 SECRETS

#1 Maintain Quality

by Greg Clark, Agronomist

Harvesting is one of several of Michigan Sugar Company's main priorities for producing high quality sugarbeets in collaboration with the factory if excessive sugar loss is to be avoided. Needless to say, good harvest planning and execution is essential in making the cooperative more efficient.

The factory requires the beet to be delivered in good condition and as free as possible from soil and crop residue. Harvesting machines must therefore be efficient, minimizing breakages and giving a good separation of the soil and trash.

Once the beet has been harvested there is a small but steady loss of sugar exacerbated by poor storage conditions; therefore, it is important that sugar losses during on-farm storage are minimized and the agreed delivery schedule to the factory is closely followed.

Sugarbeets should be handled as gently as possible to remove soil and trash to minimize sugarbeet breakage and bruising. The way sugarbeets are handled in harvesting and piling operations has a very significant effect on long-term storage in piles.

Both the quantity and quality of yield are influenced by defoliating and scalping operations. Overly aggressive defoliating and scalping will reduce yield for the grower and will increase deterioration during storage, due to the large, exposed root surface. If too much of the leaf or petiole is left on the root, root tare will be high and the root will tend to regrow in the storage pile. If the entire crown surface is left intact, impurities detrimental to processing will be high. The best defoliating and scalping compromise for both grower and processor is to remove all leaf and petiole material and to scalp only the very top of the root which contains most of the petiole area — silver dollar size (Photo 1).

Flails should be adjusted to remove all green leaf material from the crowns. Poor flailing operations are generally caused by improper adjustment and too high a rate of ground speed. Research done by Sugarbeet Advancement showed sugarbeets that were not defoliated (full canopy) gained temperature slower than those that were defoliated. Defoliated beets actually increased temperature more quickly than air temperature (Figure 1). Flail only the amount of sugarbeets to be harvested each day and do not defoliate more than 30 minutes ahead of harvest, thus preventing sugar loss associated with high temperatures due to increased respiration.

Photo 1. **Proper Defoliated Sugarbeets**

Harvesters must be properly adjusted and operated at the proper speed and depth to lift and clean sugarbeets. Otherwise, excessive soil, trash, and broken and bruised sugarbeets will be loaded on the trucks. Row finders should be operating properly to prevent slicing and loss of sugarbeet root tips in the field.

Frosted or frozen sugarbeets cannot be piled safely, as they will deteriorate rapidly. When sugarbeet crowns are frozen or frosted in the field, harvest should be delayed until the sugarbeet tissue has a chance to thaw and stabilize.

Drop height is another concern that producers need to think of when harvesting. There is a correlation between increased respiration with increased drop height.

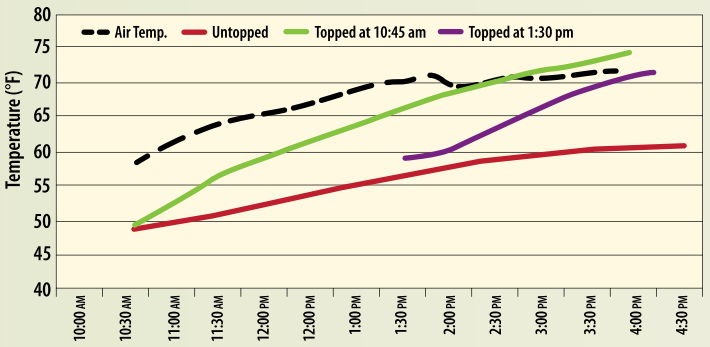
One item that must be emphasized is that the respiration rate at 3°C is about as low as one can go. The increase in respiration over that minimum is what we have the opportunity to control. This study was done by Dr. Beaudry from Michigan State University. Dr. Beaudry's research was done for three months. The roots were not stored the entire time at that temperature. They were held at 5°C and then transferred to the different temperatures, as if they had undergone a temporary increase in temperature. As seen in Figure 2, as the height at which the sugarbeets were dropped and as the temperature increases so does the respiration rate, thus loss of sugar.

On a final point, storing beets at the proper temperature is critical for efficient sugarbeet production. Proper sugarbeet storage temperature is below 50˚F. Sugarbeets in storage piles are alive and must be maintained in a live condition. When piled hot (above 55˚F), beets lose much more sugar through respiration than when piled cool (below 50˚F). Merely reducing pile temperature from 50° to 35°F will reduce sugar consumption via respiration. Using ventilation in the sugarbeet piles has enhanced the rate of heat removal and improved sugarbeet storage and recoverable white sugar for Michigan Sugar Company (Figure 3).

Michigan Sugar Company will do all within its ability to process all the sugarbeets in an efficient and low cost manner. This all starts with the product that is delivered to the cooperative. The defoliation and harvest operations can knowingly impact the end results. By working together, we can attain the maximum potential revenue for every sugarbeet grower.

Figure 1. **Beet and Air Temperature**

Sugarbeet Advancement



Harvest Practices

Figure 2. **Respiration, Drop Height, and Temperature**
Michigan State University

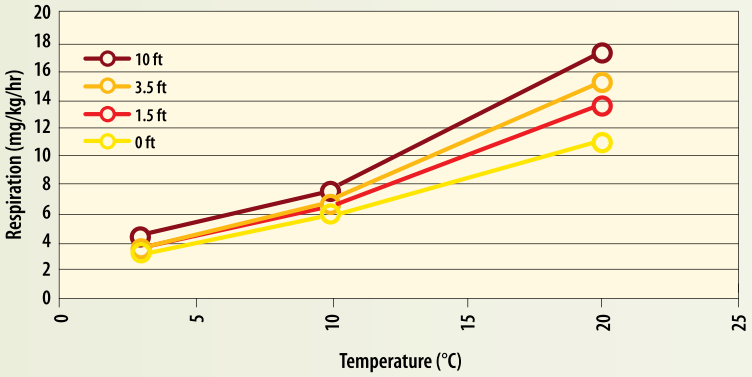
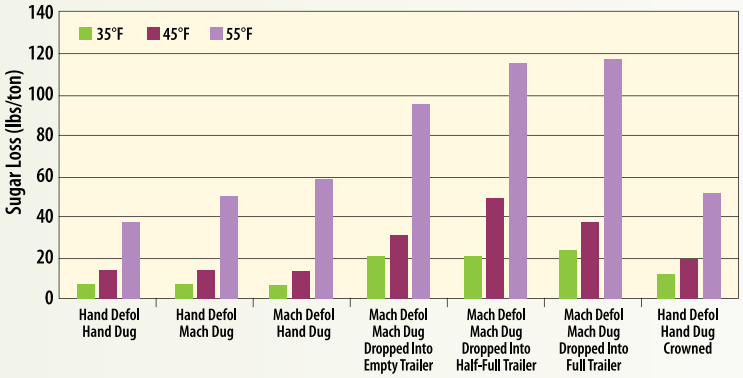


Figure 3. **Sugar Lost in Storage**
Michigan State University • Three month storage, constant temperature
Defol = Defoliation • Mach = Machine



#5 Pay Attention… and Stay in Touch!

by Lee Hubbell, Agronomist

It is a hot night late in June and rain is in the forecast — Cercospora is coming! What do you do? It has been four months since you received the Research Results Book and it is someplace in the shop… There was a pamphlet sent out by REACh that was very good, but where is it? It is probably too late to call your agriculturist; you know he would have the answer. What can you do? You want to be ready to control Cercospora. The Internet! That's the answer to everything; however, you do not want information from Idaho, the Red River Valley or Europe.

Make use of the valuable research results and recommendations generated by the professionals from Michigan Sugar Company, university and USDA-ARS personnel.

Go to http://www.michigansugar.com/agriculture/index.php.

You will find a wealth of research results from the Michigan Sugar Company Research Department, Sugarbeet Advancement, universities and USDA.

It's Simple to Find Information You Need Online

Screenshot A:

1. Go to the Michigansugar.com homepage

Select "Agriculture" drop down

Select "Research: Searchable"

Select "Category" drop down

Select subject, *Cercospora Leafspot Management*" as an example

Screenshot B:

2. Select "Sub Category" drop down

Pesticide
Tolerant Varieties
BEETcast
Resistance Management
Other

Select one and click on "Find Documents"

Screenshot C:

3. Select the trial you would like to see (checkbox).

Click on "Download Selection" (found below list)

Additional information available online at Michigansugar.com

Select "Agriculture" drop down menu

- Growing Sugarbeets
- Grower Guide
- BEETcast
- REACh
- Complete Research Publications
- Research: Searchable
- Newsbeet Magazine
- Agricultural Links

Select "REACh" and select one of the following for more information:

Agronomy — articles and information on growing sugarbeets.

Field Alerts — such as the first Cercospora spots observed each year.

Production Bulletins —such as the REACh Cercospora Leafspot Flyer.

You can also contact any one of our research specialists directly to discuss your specific concerns or issues.

RESEARCH SPECIALISTS:

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Lee Hubbell, *Research Agronomist, is a specialist in sugarbeet variety and agronomic testing and has been with Michigan Sugar Company for 27 years.*

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We are determined to help you to produce the most successful sugarbeet crops and keep your field in focus.

Provided to Michigan Sugar growers by

WINFIELD

Location	Winfield Seedex Dealers	Address	City	State	Phone	Sales Rep
Pigeon	Cooperative Elevator	201 Berne Rd	Pigeon	MI	989-453-4500	Randy Haag & Dan Armbruster
Gagetown	Cooperative Elevator	6678 Gage St	Gagetown	MI	989-665-9975	Joel Fischer
Sebewaing	Cooperative Elevator	969 Pine St	Sebewaing	MI	89-883-3030	Joel Fischer
Fairgrove	Cooperative Elevator	4931 Shreeves Rd	Fairgrove	MI	989-693-6104	Jim Reithel & David Ackerman
North Branch	Cooperative Elevator	4290 N Branch Rd	North Branch	MI	810-338-4086	Dar Green
Ruth	Cooperative Elevator	4600 Ruth Rd	Ruth	MI	989-864-3391	Travis Tanton & Jim Terbrack
Bad Axe	Cooperative Elevator	210 Thompson Rd	Bad Axe	MI	989-269-9929	Dutch Seley & Tim Wilke
Ithaca	GAPS	3151 W Fillmore Rd	Ithaca	MI	989-875-7661	Phil Schneider & Ed Nickels
St Louis	A & E Ag	720 East Washington	St Louis	MI	989-681-3080	Chris Engle, Jason & Christie Apple
Fowlerville	Fowlerville Farm Services	320 Garden Lane St	Fowlerville	MI	517-223-9148	Kerrek Griffes
Rapson	Star of the West Milling	2222 N Verona Rd	Bad Axe	MI	989-269-7957	Amy Sweeney & Dennis Bischer
Richville	Star of the West Milling	3269 South Vanburen	Richville	MI	989-868-4186	David Jankowski & Jeff Martus
Kinde	Farmers Co-operative Grain Co	338 Main St	Kinde	MI	989-874-4200	Jeff Kreh
China	Schweihofer Seed Sales	3169 Allington St	China	MI	810-650-5819	Ryan Schweihofer
Freeland	Freeland Bean and Grain	1000 E Washington St	Freeland	MI	989-695-9131	Vic Hupfer
Forest	Lakeside Grain & Feed	7858 Rawlings Rd	Petrolia	Ontario	519-490-5442	John Waters
Petrolia	Lakeside Grain & Feed	7858 Rawlings Rd	Petrolia	Ontario	519-490-5460	Brian Hoven

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The Power of Mapping

***Above left:** New mapping technology to help a grower view maps and digital imagery of their fields. **Above right:** Live mapping screenshot*

by Greg Clark, Agronomist

By now, almost everyone knows the initials GPS stand for Global Positioning System and that GPS is a satellite-based radio navigation system that can greatly help us in a variety of ways, such as for guidance on streets or during outdoors events such as fishing or hiking. It also is well known that companies use GPS to optimize delivery routes and determine location of vehicles, becoming more efficient at their jobs. Even cell phones have a GPS chip that can be used for guidance or for help. What about in agriculture? In what forms can we use a GPS receiver to become more efficient in what we do? Michigan Sugar Company looks forward to using GPS technology to increase efficiency within its cooperative.

In the Summer 2012 issue of the *The Newsbeet*, the article, "Looking at the Future: GPS and GIS Technology," stated that Michigan Sugar is looking at this technology to help empower growers' ability to view maps and digital imagery of their fields, along with the ability to enter crop records from an Android-based smartphone or tablet. Well that possibility has become a reality, and all sugarbeet fields will be GPS in 2013.

The software that Michigan Sugar Company will be using is MapItFast. MapItFast is a hardware and software system that allows agriculturists to collect GPS precise points, lines and polygons used for mapping features. Using an Android-based system, the agriculturist makes one tap to map a point, line or polygon feature based upon the user's current GPS location. Descriptive information for all of your features (including camera images) may be added while in the field.

MapItFast provides Michigan Sugar Company with the tools needed to gather, manage, store and disseminate geographic content. Mobile device software provides agriculturists with powerful and easy data gathering tools while secure cloud services permanently warehouse your data.

Advantages of GPS guidance for Michigan Sugar Company include:

- This technology will help improve acre accuracy, especially with all the wind turbines going up.
- Eliminating outdated measurements from the FSA office.
- Timeliness of measurements.
- Use of field locations for BEETcast… tethering to weather stations.
- Basis for freight incentives. Knowing exactly how far beets are from receiving stations.
- Visual maps of trends (e.g. showing locations where the highest or lowest yields and sugar % are within the cooperative.
- Utilizing Crop Records more efficiently.
- Using technology such as iPads or smartphones to know what field you are in so Crop Records can be easily updated and maintained on a regular basis.

Today, precision agriculture is about whole farm management with the goal of optimizing returns on inputs while preserving resources. It relies on new technologies like satellite imagery, information technology, and geospatial tools. Michigan Sugar Company will use this technology to enable the coupling of real-time data collection with accurate position information, leading to the efficient manipulation and analysis of large amounts of data for the cooperative.

***Greg Clark** is an Agronomist at Michigan Sugar Company. He has 14 years of experience in agronomy. He specializes in entomology, plant physiology, and plant pathology. Greg joined Michigan Sugar Company in October 2010.*

BENEFITS OF SPENT LIME:

- **Increase soil pH of acidic soils**
- **No detrimental effects on rotational crops**
- **Increase yields of sugarbeet crops with severe Aphanomyces**
- **Increased N_2, PO_4, K, Mg, Ca, S, B availability and adds calcium and manganese**
- **Balances acidic results of N fertilizer use**
- **Offset surface acid zones in low-till farming**
- **Balances acid produced through harvesting (i.e., removal of calcium in crops)**
- **Increases microbial activity**
- **Better soil structure (air and water flow) and residue decomposition**

PRICING & PROCEDURES*

MEMBERS

Members will be charged $2.20 per ton to help defer lime preparation and loading expense. One lime coupon will be required for each load of lime shipped. Members may obtain coupons in the agricultural office at any factory location. Members may also print coupons from the secure area of the Michigan Sugar Company website (michigansugar.com).

Members with a current Planting Agreement in place will have the cost of lime shipped deducted from future sugarbeet payments. If there is no current Planting Agreement, Michigan Sugar Company will invoice for lime shipped.

NON-MEMBERS

Pre-purchase lime coupons in the agricultural office at any factory location:

$90 for up to 20 tons	$135 for up to 30 tons
$180 for up to 40 tons	$245 for over 40 tons

Lime coupons leftover from 2012 can be refunded at an agricultural office. New coupons must be purchased for 2013.

Prices shown are good through 3/31/13.

CONTACT INFORMATION

- **Bay City** • 989-686-1549 – Press 7, for more information press 1.
- **Carrollton** • 989-686-1549 – Press 7, for more information press 2.
- **Caro** • 989-673-2223 – Press 2, press 7, for more information press 1.
- **Croswell** • 810-679-2241 – Press 6, for more information press 1.
- **Sebewaing** • 989-883-3200 – Press 2, press 5, for more information press 1.

Jim Gordon, fourth–generation CEO of Grand Rapids, Michigan-based Gordon Food Service, spoke to an audience of Great Lakes Bay Region family businesses, including several Michigan Sugar Company growers, in December of 2012 as part of the Stevens Center for Family Business major event series.

Focus on the Family Busi

by Regeana Heinrich, Associate Director
Stevens Center for Family Business

The Stevens Center for Family Business (SCFB) at Saginaw Valley State University has been serving family businesses — including agri-businesses — of the Great Lakes Bay Region since the year 2000. It is the only organization in the region designed specifically to meet the needs of family businesses, addressing topics and issues that are unique to family enterprises.

In the Summer of 2012, Michigan Sugar Company joined with the SCFB to provide new opportunities for shareholders to learn about practices that can help family farm enterprises be more successful, not only with the bottom line, but with the unique relationships involved with family farming.

Family businesses are different from non-family companies. They have all of the challenges of any business, with competitive pressures, economic and financial concerns, and technology, but there is an added dimension — the family dynamics which inevitably influence business.

Whether the family business involves manufacturing, construction, retail, professional services, entertainment, high tech or agriculture — regardless of the field, there is the common bond: The business' success is intricately woven with the family's relationships.

Succession planning is a major issue among all family businesses, and certainly among family farms. Sound planning and preparation can make all the difference in having a smooth transition from one generation to the next.

A recent study, however, by Michigan State University's College of Agriculture and Natural Resources and Center for Regional Food Systems indicates that only about half of Michigan farmers have an estate plan. This leaves their heirs vulnerable to significant turmoil — both during the owner's life and upon his or her death — and can put the continuation of the family farm in jeopardy.

The SCFB focuses a lot of attention on succession planning, and provides a variety of resources for learning about it and doing it. While estate planning and drawing up the associated required documents are important components of succession planning, it is wise to view succession planning not as a single event, but as a process happening over a period of several years. This includes identifying a potential successor(s) early on; instilling strong values, a solid work ethic, and practical knowledge; keeping lines of communication open and strong between the generations; and devising a practical exit strategy and transition.

To provide practical information about succession planning and all of its related activities, the SCFB offers a variety of activities and events. These include major presentations from family business experts and successful family business leaders, as well as workshops presented by the 12 professional firms — attorneys, bankers, insurance companies, CPAs, etc. — who serve as sponsors of the Center.

Those family businesses, who become members of the Center, have a wealth of additional resources to draw from. One of the most popular and highly regarded are peer group sessions. Peer Groups are a relatively small group of individuals who share a common perspective. They meet three to five times a year, in a comfortable, informal, confidential setting, with a facilitator to guide discussion about family business topics of mutual

Amigo Mobility was established in 1968, with an invention by founder Al Thieme. Two generations now work in the company. Left to right: Jennifer Thieme Kehres, Jordan Thieme (both second generation), founder, Al Thieme, and CEO Beth Thieme.

The Bavarian Inn of Frankenmuth was a founding member of the SVSU Stevens Center for Family Business. Above, Dorothy Zehnder in her kitchen at the Bavarian Inn.

ness

interest. Peer Groups are currently in place for Leading Generation, Next Generation, and Key Non-Family Executives. Peer Groups are under consideration for family farm operators and spouses of family business leaders.

Family businesses, including family farms, have long been the bedrock of the American economy and of our communities. They possess ingredients for tremendous success: a common purpose, shared values, and tolerance for risk, but their greatest strength — the capacity to create a legacy for the next generation and pass it on — can also be their greatest challenge.

The Stevens Center for Family Business is available to help Michigan Sugar Company family farmers capitalize on their strengths, while helping to secure a long, prosperous and harmonious future.

THE STEVENS CENTER FOR FAMILY BUSINESS AT SVSU

Where networking, knowledge and success meet.

UPCOMING EVENT:

Behind the Curtain – An Intimate Look at Succession Planning

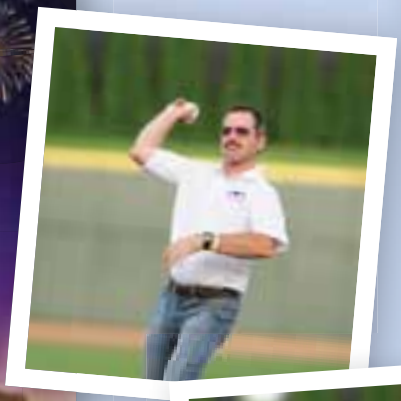
Kathy Wiseman, President, Working Systems, Inc.

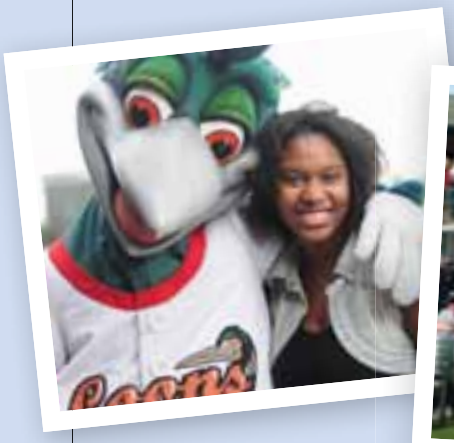
Thursday, April 25, 2013 • 7:30 to 10 am

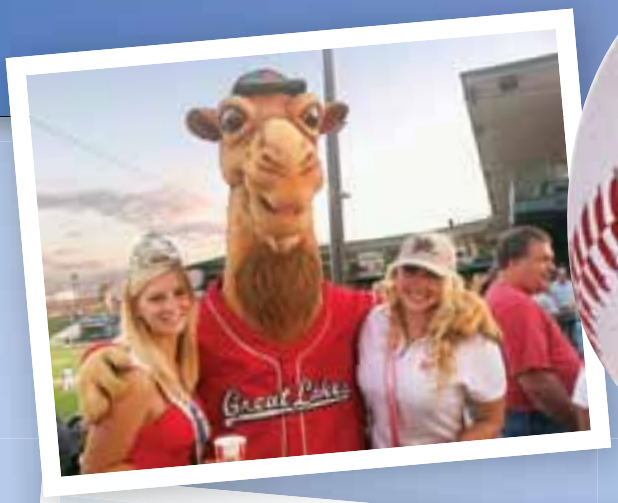
Regeana Heinrich *Rejeana Heinrich is Associate Director of the Stevens Center for Family Business. A graduate of Central Michigan University, her professional background is in public relations and marketing. She has received more than 35 local, regional, and national awards for PR and marketing communications projects.*

Celebrating 10 Years of Sweet Success!

Michigan Sugar Company celebrated "10 YEARS OF SWEET SUCCESS" — Growers and employees commemorated the 10th anniversary of the grower-owned cooperative with a fun-filled night watching a Great Lakes Loons game at Midland's Dow Diamond on August 27, 2012. The stadium opened early exclusively for the Company's participants to watch batting practice, meet and greet with the players, listen to a live band, and enjoy a buffet dinner. Chairman of the Board, Richard Gerstenberger, threw out the first pitch to start the game. The evening was then topped off with a spectacular fireworks display!







Char Creek Farm Ontario, Canada

A Rolling Stone Gathers No Moss

John Noorloos and his wife, Margaret, farm approximately 900 acres of mainly Brookston clay and clay loam in Lambton County, with the base of their operations, Char Creek Farm, just east of Sarnia, Ontario. They produce corn, soybeans, wheat, and sugarbeets and have the capacity to feed 2,000 head of beef cattle at their feedlot. They have eight children, four boys and four girls, between the ages of 13 and 28 years old. Their eldest son, Tony, owns his own farm and works full time for the family operation. John and Margaret have been blessed with eight grandchildren, to date. The Noorloos family is active in their church and community.

The family had its beginnings in Canada and the sugar industry when Anthony Noorloos and his bride-to-be, Tena, immigrated to Canada from the Netherlands. Their families both settled in the Chatham area where they ultimately met, and eventually married, settling in Tupperville, where John was born. In 1960, Anthony and Tena bought a farm and moved to Wyoming, in Lambton County on Confederation Line, where John's brother, Al, and his family live today. A strong family bond was developed early on and continues today in the Noorloos family. Char Creek Farm (John and Margaret), Triple A Feedlot (Al and Marlene), A. Noorloos, Ltd., and Just Beginning, Inc., together grow approximately 600 acres of sugarbeets. In 2004, the Noorloos Group received the High Sugar Producer Award for Lambton County with 8,522 RWSA.

Above, left to right: Tony Noorloos, Margaret and John Noorloos. Below, Anthony Noorloos, and his wife, Tena. Anthony passed away in 2012. Together, the couple began growing sugarbeets in 1997, and Tena continues to grow them today.

The family's ability to work together as a team and adapt existing technology to the sugar industry's changing needs is a contributing factor to their success. John and his partner, Eugen Burgin, of Forest, established ROPA North America in 2002. These entrepreneurs recognized the need, and potential demand, in the industry for the Euro Maus and Euro Tiger. The use of this harvesting and cleaning/loading equipment has been growing ever since. John also designed and manufactures the Big Bear sugarbeet cart. This cart is on tracks and has some identical components as the Euro Tiger, most notably the discharge chain conveyor. It unloads in about 90 seconds. The harvester discharges an entire 25-ton load in about 45 seconds. This cart serves as an excellent tool supporting conventional and self-propelled harvesting equipment in the field for building the windrows of sugarbeets to be recovered with the Euro Maus.

In 2008, John designed the head for recovering beets out of the Michigan Sugar Company beet receiving station in Ontario. This method of beet recovery re-cleans the sugarbeets removing the balance of tare material, gravel, and snow. This results in significant savings on freight, cleaner beets on the pad, and safer dumping for trucks.

John Noorloos has no moss growing under his feet. John's high energy and drive to succeed has left a trail of positive results over the years.

REAL. SWEET. WINNERS!

East District

The East District's High Sugar Producer for Crop Year 2012 was Les Volmering of Ruth, Michigan. Les' field produced a record 327.88 pounds of recoverable sugar per ton (RWST). The 78.5-acre field was planted on April 1, 2012, with American Crystal 827 seed variety. The field was harvested on October 29 yielding 32.40 tons per acre and 21.57% sugar.

Les is part of a family partnership consisting of his father, Jerome, and brothers Doug, Bill, and Rich. Les' son, Troy, and Rich's son, Ryan, are part of the business as well, and the third generation on this family farm. Troy achieved the East District high sugar award back in 2010 with 306.3 pounds of sugar per ton. The Volmering's farm approximately 3,800 acres of land in the Ruth area. Crops produced by the family include 1,100 acres of sugarbeets, 1,500 acres of corn, 800 acres of edible beans, and 400 acres of wheat. Besides crops, they feed 2,000 head of Holstein steers per year. The family milked cows before entering the beet business in 1995. They soon realized that growing sugarbeets could afford a transition from milking cows, full time, to crop production without the daily work of milking cows.

The Volmerings have been growing their row crops in 22-inch spacings since the year 2000. They, and another neighbor, were the pioneers of narrow rows in that part of Huron County back when they converted over. When asked about his commitment to narrow rows, Les is eager to share that crops on their farm have produced the same or more than conventional row spacings. Les studies and uses the REACh recommendations to produce successful sugarbeet crops every year. The farm uses two applications of Quadris on their beets and strictly uses the BeetCast model to spray their leafspot fungicides. The 260 acres of beets grown on Les' own land yielded 307.7 pounds of recoverable sugar per acre this past season. The crop yielded 31 tons per acre and 20.47% sugar.

Thumb Maus is a partnership that Les, his brother, Doug, and neighbor, Chris Guza, started in 2010 with the purchase of a Maus 3 for custom field beet cleaning and loading. They were the operators who provided the Maus machine for the Ruth Direct operation from the start. That year, the Ruth piling ground was able to stay closed during the pre-pile delivery time since the Thumb Maus provided field cleaning and loading from each farm field. This partnership still provides Maus services for the Ruth area during pre-pile beet harvest time. In 2012, they used a Maus 4 to load out almost 63,000 tons of beets early for Ruth Direct and 82,000 tons were field-loaded during permanent pile time and shipped to the Caro and Bay City factories.

Congratulations to Les for the record sweet 2012 sugarbeet crop! With father and son growing record sugarbeet crops for two out of three years, it will be an achievement difficult to match!

Central District

This year's High Sugar Producer Award goes to Kurt Ewald (Lakke Ewald Farms, Inc.) of Unionville, Tuscola County, Michigan. Kurt plants between 550 to 600 acres of sugarbeets per year in a four-year rotation; 20-inch rows. Kurt has been using trap crops, alfalfa, and nematode-resistant varieties on a majority of his acres as well as good management practices and timely sprayings for Rhizoctonia and Cercospora leafspot. This year, his work paid off with one of his fields reaching a RWST of 320.30 pounds, sugar content of 20.85%, and a CJP of 96.40% on 96 acres. Kurt also had another 394 acres at or above the 300 lb. RWST mark. Congratulations Kurt and his team!

West District

Sugarbeet production in the Hrabal family goes back generations and that experience shows year after year, not only in sugarbeets, but all of their crops. Up until this year, Gratiot County has had three tough growing seasons. Even through those tough years, Hrabals have still had above average yields and sugar percent in the top five growers of Gratiot County.

In 2012, Mother Nature cooperated with timely rains, warm days and nights and Hrabals shattered their past records — 787 acres planted, 25,210 tons delivered, 32.01 T/A, 2.43% tare, 19.44% sugar, 95.93% purity and 294.59 RWST average over their planted acres. While we think that is very impressive, Kurt and Dick would say there is always room for improvement.

Several practices have attributed to their success, including stretching out rotations, cover crops, radishes, and staying off the ground until it is dry enough. Little details help them stay on top, including variety selection, which is vital, especially in this growing area. Rhizoctonia can devastate a sugarbeet crop and we have seen this in the past, but we do have some good varieties that hold up under our severe disease pressures. Every year, Kurt spends countless hours researching varieties and when he feels comfortable with his choices, he will sit down and go over each choice for each field until he and his Michigan Sugar Company agriculturist both agree. When going through the variety trials there are several high ton/high sugar varieties that make it tempting to experiment and they have in the past. Even though some of those choices failed, they see the need to be open minded enough to at least try a few acres.

Quadris applied in furrow and at the six- to nine-leaf stage is critical even with our tolerant varieties, and Kurt applies both on all acres. Leafspot control also is a high priority. They rely on BeetCast DSV to time their application of fungicides, which can be very costly, but results from not spraying also can be devastating.

Kurt has planted in stale seed bed in the past. For their operation, they have found that just going over that cold ground and just breaking through three to four inches warms the ground faster and leaves behind a better seed-to-soil contact and also faster emergence.

Congratulations to Hrabal Farms for being High Sugar Producers!

Spotlight on Youth & Education

2012 Youth Project Awards

MICHIGAN SUGAR COMPANY YOUTH SUGARBEET PROJECT

Designed specifically for youth in the sugarbeet producing areas of Michigan, the Youth Sugarbeet Project seeks to promote education and interest in sugarbeets. The program is for all youths who wish to participate in a supervised sugarbeet project sponsored by Michigan Sugar Company and offers opportunities to earn awards and recognition and opportunities for scholarships. For more information, visit www.michigansugar.com/about/youth.php

EAST DISTRICT

The East District held their annual Youth Sugarbeet Project Awards Banquet on January 7, 2013. There were 20 participants in this season's project resulting in four Premier Award recipients and two Prestige Award recipients. The Awards Banquet was held at Woodland Hills Country Club in Sandusky.

Julie Maurer, a senior at Harbor Beach High School, was the master of ceremonies for the evening. Julie and her sister, Lauren Maurer, received top honor Prestige Awards. Julie and Lauren's parents are Duane and Diane Maurer. The Prestige Award gifts were a wall plaque with beet knife and an aluminum sports fold-out chair.

Those receiving Premier Awards were: Luke Gehring (parents Paul and Tracy), Cassidy Maurer (parents Rich and Barbara); Kara Maurer (parents Duane and Diane); and Justine Roggenbuck (parents Jim and Stacie). The Premier award gifts were aluminum sports fold-out chairs. All participants received a computer/gadget backpack and a Michigan Sugar Company logo lanyard.

New this year to the East District Youth participants was a Summer Field Day at the Saginaw Valley Research and Educational Center in Richville. Students had plot tours of sugarbeet disease, seed varieties, pests, and were shown how to prepare sugarbeets for fair exhibits. Participants were administered written tests and interviews by the Michigan Sugar Company agricultural staff.

Julie Maurer

Left to right: Cassidy Maurer and Kara Maurer

Lauren Maurer

Left to right: Justine Roggenbuck and Luke Gehring

CENTRAL DISTRICT

The 2012 Youth Sugarbeet Project started in the early spring with planting in late March and early April. The crop got off to a fast start with good stands and quick row closure. Each participant was charged with the care and record keeping from one acre of sugarbeets out of their parent's contract. The individual clubs held several meetings during the season.

This year, instead of having district test and interview days, the whole Company came together to host the big day. All participants were encouraged to attend a Summer Field Day held on July 12 at the Saginaw Valley Research and Educational Center in Richville. There were tours of the test plots, stops to identify weeds and diseases, plus a demonstration showing how to clean and prepare sugarbeets for display at county fairs. The test and interviews were also conducted that day. All the mentioned components counted toward the eventual Prestige and Premier winners for each area. The season was capped off with an Awards Banquet held in each district of the Cooperative.

The Central (Caro and Sebewaing) District Banquet was held on Wednesday, January 9, 2013, at The Gardens of Grices south of Caro. There was a wonderful meal and then awards were presented.

For the Caro area, Prestige winners were: Wille Keinath (parents Allen and Cindy), Jessica Hecht (parents Jason and Hope) and Nathan Bublitz (parents Curtis and Ann). Premier winners were: Eric Schian; Abby Hecht; Hans Bierlein; Cassie Keinath; Heidi Bierlein; Makenna Karst; Courtney Reinbold; and Eric Mossner. For the Sebewaing area, there were four Prestige winners: Erica Gremel (parents Joel and Lyndsay); Grant Gremel (parents Joel and Lyndsay); Luke Harrington (parents Gene and Wendy); and Joe Lutz (parents Matt and Terri). There were also 11 Premier winners: Jared Schuette; Alexis Schuette; Alexis Bushey; Luke Retford; Adam Retford; John Lutz; Emma Maust; Aaron Maust; Mitchell Richmond; Shawn Gayari; and Andrew Smith.

Front row, left to right: Hans Bierlein, Abby Hecht, Andrew Smith and Mitchell Richmond. **Back row, left to right:** Aaron Maust, Emma Maust, Heidi Bierlein, Courtney Reinbold, Eric Mossner, Makenna Karst, John Lutz, Shawn Gayari, Jared Schuette, Adam Retford, and Luke Retford. Missing are Eric Schian, Cassie Keinath, Alexis Schuette and Alexis Bushey.

Top row, left to right: Joe Lutz, Jessica Hecht, Luke Harrington; **Bottom row, left to right:** Grant Gremel, Nathan Bublitz, Willie Keinath and Erica Gremel

WEST DISTRICT

The 2012 annual Youth Sugarbeet Project Awards Banquet was held on January 3 at the Trillium Banquet Center in Saginaw. This year, 31 students were involved in the Youth Project which resulted in six Premier Awards and three Prestige Awards.

Scoring for the award winners was based on a written test, interviews by company personnel, project books and a written story, District Agricultural Day attendance and county fair participation. All participants received great prizes this year with the Premier and Prestige receiving special awards. Participants receiving the Premier Awards were Spencer Brown; Amber Brown; Landon Hrabal; Rylyn Hrabal; Jeremy Hecht; Josh Haubenstricker; and Kayla Ratajczak. Those receiving the top honor of the Prestige Awards were Hunter Hrabal (parents Kurt and Cynthia); Timothy Frahm (parents Eric and Teresa); and Amy Hecht (parents Tim and Gloria). The night was topped off by a great meal and a number of participants reading their written stories.

This past year, activities for our Youth Sugarbeet Project participants included an educational morning at the Saginaw Valley Research and Education Center on July 12. This was the second year this event was held there and it worked out great for us to use this facility for the summer event. This was the first year that all of the Youth Project participants from around the state attended this event at the same time, in the same place. Students received information on weed identification, sugarbeet cyst nematode issues in beets, Rhizomania, Rhizoctonia and Cercospora. Participants were also given their written test and were interviewed by the local field staff.

The summer outing was held on June 21 where the youths attended a Tigers vs. St. Louis Cardinals baseball game at Comerica Park on a very hot but beautiful day. Along with our Youth Project participants, Michigan Sugar Company hosted a group of 15 youths and sponsors from the Bay Area Boys and Girls Club — most of whom had previously never had the opportunity to attend a Tigers game or travel to Detroit. Watching the Boys and Girls group have so much fun along with our Youth Project participants really made the whole day an even more enjoyable experience.

Top to bottom:
Amy Hecht, Hunter Hrabal, and Timothy Frahm.

Looking to the Future of Sugarbeet Farming

Now, more than ever, it is imperative that we encourage and develop the next generation of sugarbeet growers to sustain our industry for the future. Michigan Sugar Company is excited to launch its **Young Farmer Program** which will provide a forum for young sugarbeet growers between the ages of 18-35 who are interested in learning more about the sugar industry and the Michigan Sugar Company cooperative while developing leadership skills. The Young Farmer Program will give growers of a similar age the opportunity to network and discuss issues common to the next generation of farmers.

This new program is open to all Michigan Sugar Company sugarbeet shareholders, or individuals (son, daughter, niece, nephew, hired help), sponsored by a shareholder. This group of next generation sugarbeet farmers will have the opportunity to participate in activities specifically designed to help them gain an enhanced understanding of our cooperative. The young farmers will also learn how to become more successful sugarbeet growers and future leaders in our industry.

If you are interested in becoming part of the **Michigan Sugar Company Young Farmer Program**, you can apply online at www.michigansugar.com.

If you have any questions, please contact Ray VanDriessche, Director of Community and Government Relations, Michigan Sugar Company by calling (989) 686-1549, ext. 203, or by email at Ray.VanDriessche@MichiganSugar.com.

Young Farmer Program
2600 S. Euclid Ave.
Bay City, MI 48706

Bay City Strategic

by David Noble, Vice President of Operations

In 2011, the Board endorsed four major strategic projects for the Bay City factory to replace critical equipment, boost factory performance and to improve operating efficiency.

During fiscal year 2012, three projects were completed and put in to service on September 1 — new beet slicers, three new pulp presses and a new high pressure steam boiler. The fourth project, a new tower diffuser is currently being built and will operate next September (2013).

New Drum Slicers

Two new Putsch drum slicers were installed to replace five disc slicers (three original slicers from the 1960s and two from the 1980s expansion). Each drum is over seven feet in diameter, with the two-drum station designed to slice 10,000 tons/day of beets into the fine cossettes required for diffusion. Construction work involved removing the roof and four floors of equipment then digging new foundations and installing new steelwork. New floors and machinery were then installed literally from the ground up, including building a new 250-ton beet hopper and re-siting many of the pipes and tanks originally removed. Alongside the slicers, a new knife block washing station and a separate knife sharpening station were created, in which knives are now automatically machined and set to consistent tolerances to produce an improved cossette quality.

Larger Pulp Presses

Following slicing and diffusion, the resulting pulp is pressed either for direct sale or dried as an animal feed. Three larger pulp presses were installed to remove more water to boost steam dryer throughput. These were installed alongside the existing pulp presses in a refurbished building that used to house the old rotary pulp dryers. Steam drying had made the rotary units redundant. Plus steam drying uses boiler steam which passes through the dryer to the juice evaporators making the drying essentially cost-free.

Projects

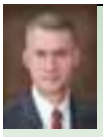
450-Pound Pressure Boiler

Along with pulp presses, to reduce the water load on the steam dryer, a new 450-pound pressure gas boiler was installed to raise dryer throughput. One of the original three package boilers was literally slid out of the boilerhouse, then foundations, building work, piping and controls were all upgraded to house the new boiler. Externally, the new boiler position is identified by the large, external draft fan and ductwork, plus a 80-foot stack to meet air quality standards. Already the factory has shown a 20–25% increase in pulp drying capability and is now producing higher value pulp shreds as well as pulp pellets.

Tower Diffuser

During the summer of 2012, all the sections of the new tower diffuser were delivered to the Bay City site. A 15-foot deep mat foundation was prepared in the old #3 pulp dryer building during July and August so construction of the new 100-foot high tower could commence this fall. This project will replace the two existing towers, one dating from the 1960s and the other from the 1984 expansion. It will be commissioned in August 2013. Together with the other projects detailed above it will allow the Bay City factory to significantly reduce energy consumption, lower sugar losses in pulp, and increase steam drying capacity. The projects, therefore, reduce costs, capture more sugar and increase pulp revenues, while replacing and upgrading 1960s and 1980s equipment and technology.

The board of directors and growers made a sizable investment and commitment in initiating these strategic projects. Engineers are currently in the midst of rebuilding the major part of the factory beet end. After the initial startup and learning process, the factory employees are already demonstrating significant process impacts. Collectively, it shows the power of joint effort and focus, it also shows the power of a long-term commitment to the success of Michigan Sugar Company.



David Noble, Vice President of Operations for Michigan Sugar Company, has been with the company for five years.

Ray's Ramblings

How Does Our Community Garden Grow?

With the Help of Many Hands!

The United Way Community Garden on Michigan Sugar Company's property on South Euclid in Bay City is an effort to expand our community garden program in addition to our current garden on State Street. Local homeless shelters and other human services programs receive the produce and are able to give healthy meals to their clients of all ages. The need is evident, and we challenged ourselves with the task of increasing this donated produce to our community.

The United Way received a generous donation of land from Michigan Sugar Company in December 2011 along with a $1,000 sponsorship to purchase tools and supplies to establish and maintain the new garden. The United Way applied for grants and received funding from the Bay Area Community Foundation of $1,500, and Mid-Michigan Community Action Agency of $400. On May 26, the planting of the garden began, which included vegetables such as tomatoes, brussel sprouts, broccoli, cabbage, zucchini, eggplant, climbing green beans, potatoes and sweet corn. Water lines were installed by United Way volunteers in early June. When we began harvesting vegetables on July 11, Hidden Harvest began distributing the produce to the organizations who service those in need in the area. Total produce harvested was 1,918 lbs., which is great for our first year! Volunteers were instrumental in making this garden a huge success with some of the volunteers being master gardeners, helping guide us to properly maintain the garden. There were 173 visits to the garden by community members and groups such as the Girl Scouts and New Dimension, volunteering over 330 hours!

The newest addition to the large garden area is fruit trees purchased at a discounted rate from Begick's Nursery. After the harvest was completed, Michigan Sugar Company added an additional 6–8 inches of topsoil and a green belt of shrubbery along the property creating a beautiful picture frame for the garden. With the success of the initial year of planting and the additional topsoil, we are already excited about and making plans for the 2013 Community Garden effort at the Michigan Sugar Company location.

With all of the collaboration, hard work by volunteers, and generosity of local businesses, such as Michigan Sugar Company, we can truly say this is a COMMUNITY garden.

United Way

Jen Idalski
Volunteer Services Director
United Way of Bay County

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