



PIONEER NEWSBEET

Spring 2004

raising quality sugarbeets





*By Mark Flegenheimer,
President and CEO*

The 2003 crop you harvested has set yet another record for both tons harvested and sugar produced.

Unfortunately, we find we are not able to sit back and fully enjoy these successes, but rather we, along with others throughout the industry, are currently fighting a serious threat to our livelihoods—CAFTA (Central American Free Trade Agreement).

The sugar industry has rallied together in complete solidarity to defeat CAFTA. This trade agreement, if allowed to pass as it is presently written, would set a dangerous precedent for numerous other free trade agreements (FTAs) that the Bush Administration is currently negotiating.

Our industry, when threatened, has historically shown a remarkable ability to fight back and survive. CAFTA is not unlike other issues we have faced in the past. We have lobbyists who are very skilled at

directing the industry through challenging situations. We have excellent support from our senators and representatives in Washington, D.C. Finally, we have strong grassroots support from our growers, employees and local communities who are willing to take action when called upon. This extraordinary support was recently demonstrated when nearly 10,000 signatures were gathered on the petitions we sent to President Bush. Those signatures sent a loud and clear message that we will not just sit here and watch our industry be eliminated by unfair trade agreements. Thank you for your commendable efforts in gathering so many signatures.

Together, with your support and the efforts of those who represent our interests in Washington, D.C., I am confident that we will navigate our way through CAFTA and other FTAs. Our industry will continue to prosper for many generations to come!

Congratulations to our grower-owners on a wonderful 2003 sugarbeet crop. 

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ABOUT THE COVER

Harvesting sugarbeets on the Harold and Betty Blaine farm. Sons Eric (driving the truck) and Jeff (driving the harvesting tractor) concentrate on their jobs. These beets were delivered to the Albee Sugarbeet Receiving Station on M-13 in Albee Township.



by Robert Braem, Vice President of
Agriculture

The 2003 crop and campaign have broken all previous records for total tons delivered and sugar produced. One year ago, concern about dry subsoil levels and predictions for a dry summer gave us no reason to believe the crop would be so great. Early planting and record-high plant populations set a strong foundation for crop growth, and then timely rains and good management practices allowed the crop to reach its high potential.

Harvest began in the Croswell District on September 22 and ramped up across the growing area soon after. Growers responded well to the improved early delivery program and provided ample tonnage to start the factories quickly. Tonnage improved dramatically throughout harvest and sugar content remained at a high level.

Growers delivered a record of nearly 2.6 million tons or 20.4 tons per acre. Sugar content averaged 18.6% and clear juice purity was 93.6%. This combination of high sugar and good purity provided the right raw materials for efficient factory operations.

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The portion of our crop piled for long-term storage was received under good harvest conditions. Root temperatures remained mostly in a range between 35° F and 52° F. Tare was average (4.5%) and the crop was relatively free of weeds. Growers in some areas struggled with proper defoliation. Higher plant populations made topping more difficult and the agricultural staff saw more “green loads” than usual. More petioles remaining on the beets will cause lower grower sugar, possible storage losses and introduce more impurities into the factory process. Going forward, we must all focus more on this important harvest step to improve quality and efficiency.

Storage conditions varied greatly throughout the campaign. Early on, above normal conditions existed for both temperature and rainfall. The agricultural staff managed piling operations to improve pile ventilation and allow good access to all piles in the yards. Early in January, temperatures dipped below average and the piles cooled dramatically. Infrared scanning showed no significant problems and pile storage problems were minimal all the way through February.

Factory operations went very well, even in a long (150-plus days) campaign. High-quality beets and hard work by factory employees led to numerous slice rate and sugar production records. The Co-op’s average slice rate and sugar recovery were well above projections. Total sugar production exceeded the record 6.3 million hundredweight produced last year.

For the two years Michigan Sugar Company has operated as a cooperative, both crops and factory operations have been outstanding. Sugar production records were exceeded both years from crops averaging 19.7 tons per acre in that period, with 18.55% sugar content, and 93.5% clear juice purity. These are all great numbers, but can we do better or produce similar quality in less ideal conditions? Through continued small improvements and change, I believe we can. The Company research efforts and recommendations will focus on growing high-quality crops. Nitrogen management, leafspot control utilizing BeetCast information, continued improvement in weed and Rhizoctonia control as well as harvesting

continued on page 33

THE WASHINGTON SCENE



*By Dick Leach,
Director of
Community and
Government
Relations*

As we approach the Spring of 2004, we, as farmers, look forward with new hope to new life and a great crop. We look forward to a change in the climate, because we remember the cold, snowy days that have just passed. The media climate in Washington this past winter has been much the same as in Michigan—harsh and unfriendly to sugar. In spite of the media's appetite for bashing sugar, we have seen some bright spots.

Since this article is being written several weeks before you are able to read it, please understand if things have changed.

We will continue to fight the passage of CAFTA (Central American Free Trade Agreement) until the Bush Administration understands the impact it will have on the sugar industry. We were successful in convincing the Administration not to include sugar in the Australian Free Trade Agreement and the agreement with the Dominican Republic being added to CAFTA (by "we" I mean every person who signed the Bush petition and all the industry efforts that were made). We cannot stop our efforts now, because an agreement is being negotiated with Thailand and they are the world's third largest exporter of sugar. More agreements will continue to be negotiated for a long time with many countries.

Here is the process for the passage of trade agreements:

1. The President submits the framework of the agreement to Congress when he chooses.
2. Congress then has 90 calendar days to develop implementing legislation. The development of the language is done by the House Ways and Means Committee and the Senate Finance Committee, and voted on by both houses.

Since Congress cannot change the framework of the agreement, the implementing language is the only input they will have.

3. The President signs the fully developed agreement.
4. Congress then has 45 calendar days to vote it up or down. Congress cannot amend it. The agreement is voted on by the House first.

Since this is a presidential election year, with all members of the House up for election, it will be difficult for the President to get CAFTA passed prior to November. He will not want to lose this just before an election. If Congress does not vote on CAFTA before adjournment, the agreement will die and need to be re-introduced after a new Congress is in session.

The sugar industry has always enjoyed good support from many members of Congress; however, this is not a "sugar" agreement. CAFTA is a trade agreement and many industries and commodities will be affected; not only now, but in the future. As we continue to work on the free trade issues, we are determining where our support lies. We will work with those members of Congress who have not been sugar industry supporters in the past, but due to their home district concerns, may assist us in defeating CAFTA.

The free trade issue will be a long row to hoe, but sugar has been challenged before and will be again.

Have a great and safe spring. 🌱

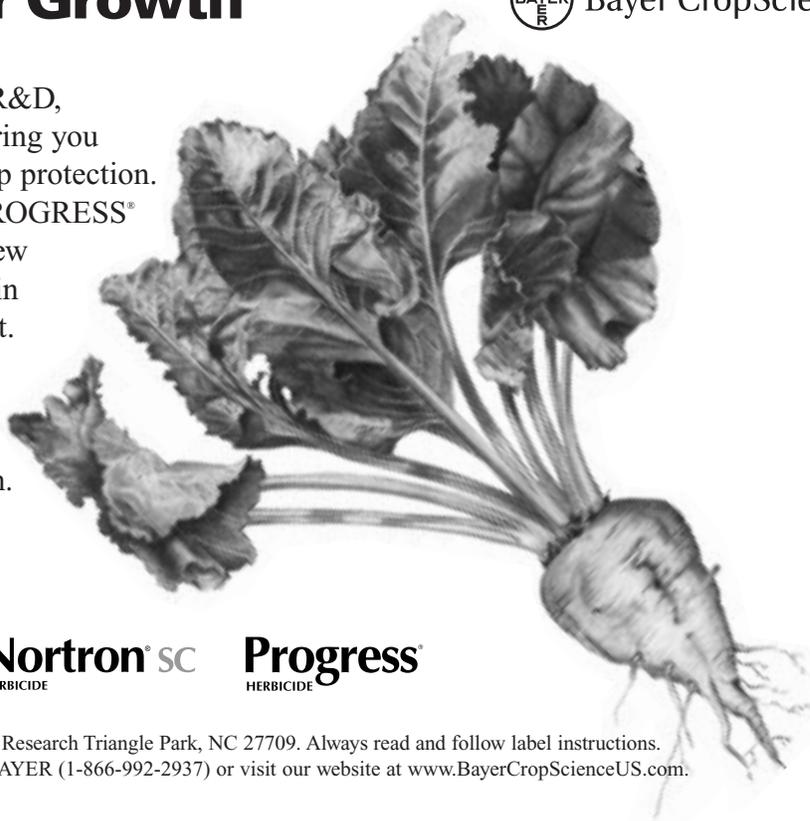
Dusty Houser accepts a stack of petitions to take back to Senator Carl Levin.

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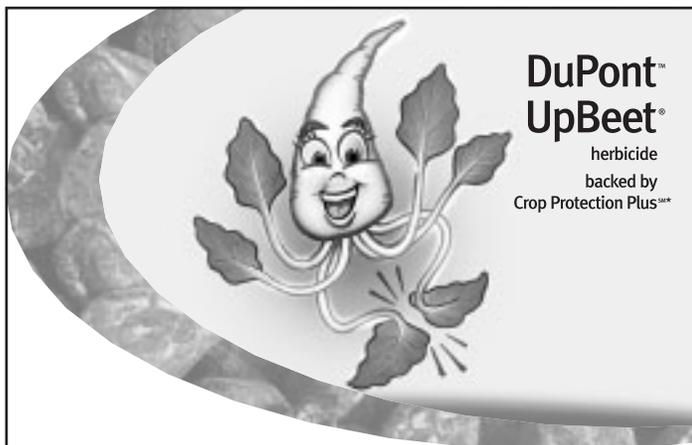
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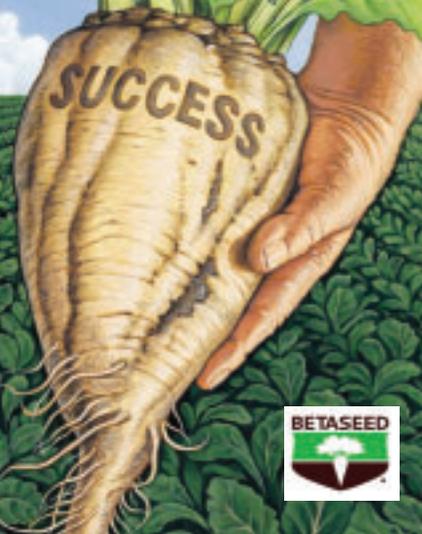
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BEETCAST: A NEW MANAGEMENT TOOL AVAILABLE TO MICHIGAN GROWERS IN 2004

This article summarizes a great deal of research and information.

To learn more, follow the links from our website www.MichiganSugar.com (Links > Agricultural Links).



*By Corey Guza,
Chief Agronomist*

BeetCast is a new tool that Michigan growers will have available

for the 2004 growing season. BeetCast consists of a series of weather stations that will collect environmental information and a website that will display this information. The website information will help growers make weed and disease management decisions. BeetCast will enable growers to calculate their fields' growing degree days (GDD) for timing micro-rate applications and disease severity values (DSV) for timing leafspot applications. GDDs and DSVs will be calculated daily from weather stations throughout the growing region. Daily values will be displayed on color-coded maps showing differences in environmental conditions between

and around each of the stations. On the map will be names for the weather station sites and the total values to date of either GDD or DSV. Tables will contain GDD and DSV data from each day, which is helpful when calculating the number of GDDs or DSVs that have passed since the last spray timing. The BeetCast website is www.michiganbeets.com and the 2004 season information will be activated April 1.

GROWING DEGREE DAYS

Growing degree days are calculated by averaging the high and low air temperatures for a 24-hour period and subtracting 34. This will give the GDDs for one specific day. For spray application timing, growing degree days begin accumulating after planting and restart after each herbicide application. Research from Michigan State University indicated the greatest crop safety by applying micro-rates

at 225 and 275 GDDs. Common lambsquarters control was excellent at intervals of 225 or 275 GDDs; however, intervals of 275 GDDs did not control pigweed species as well as closer spaced timings. Therefore, MSU researchers recommended applying micro-rates at intervals of 225 GDDs in fields with low to moderate weed pressure. In fields with high weed pressure and darker soils, however, consider applying micro-rates earlier. See *Pioneer Newsbeet* (Spring 2003), "Timing Micro-rate Herbicide Applications by Growing Degree Days," for more details.

DISEASE SEVERITY VALUES

Leaf wetness and temperature are two major factors that influence the development of leafspot. Researchers at Ridgetown College University of Guelph were able to link leaf wetness and temperature to leafspot development. They express the combination of leaf



Left inset picture: The Ontario Weather Network's patented leaf wetness sensor used to determine hours of leaf wetness per day.

Right inset picture: Commercial temperature sensor and housing used to capture temperature data.

wetness and temperature as a disease severity value, or DSV. As temperature and moisture conditions occur that favor leafspot development, BeetCast assigns a DSV number. Daily DSVs range from "0" to "4" ("0" indicating conditions were not favorable and "4" indicating weather was ideal for leafspot development that day).

Research in 2002 and 2003 indicates that when a total of 55 DSVs have accumulated, it is the most economical time to spray for leafspot. In both 2002 and 2003, research has shown potential for an increased economic return using BeetCast compared to scouting alone. Increased returns can be from improved sugarbeet yield and quality, more timely fungicide applications and the potential to reduce input costs by reducing the number of applications. 🌱



An example of the color-coded map showing DSV numbers for the identified locations and the surrounding area.

FIGURE 1

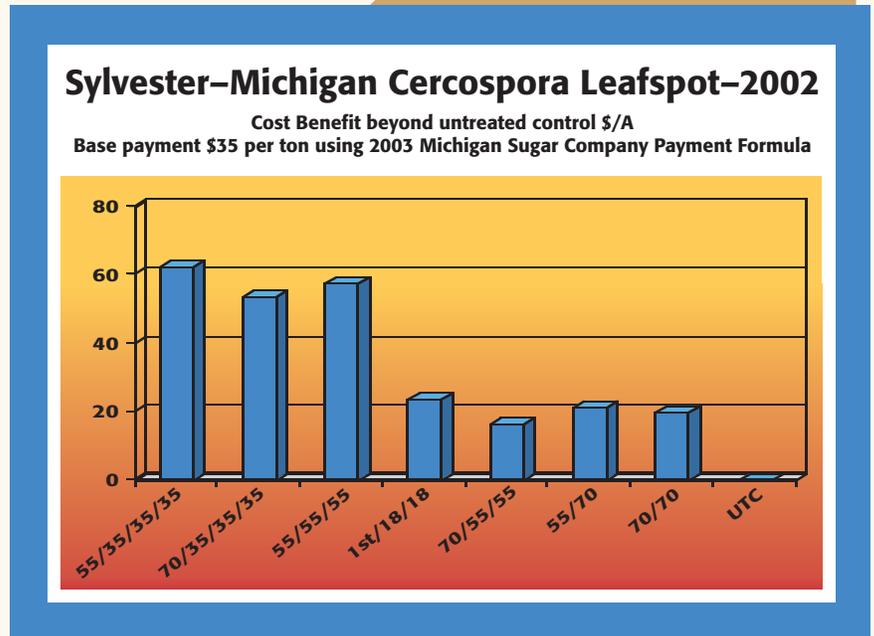


Figure 1. Cost benefit beyond untreated control. 2003 payment plan with an estimated base payment of \$35/ton minus cost of fungicides and \$5/A cost of application. Fungicide cost based on Sugarbeet Advancement Newsletter 2003 "Cercospora Leafspot: Identification and Control."

FIGURE 2

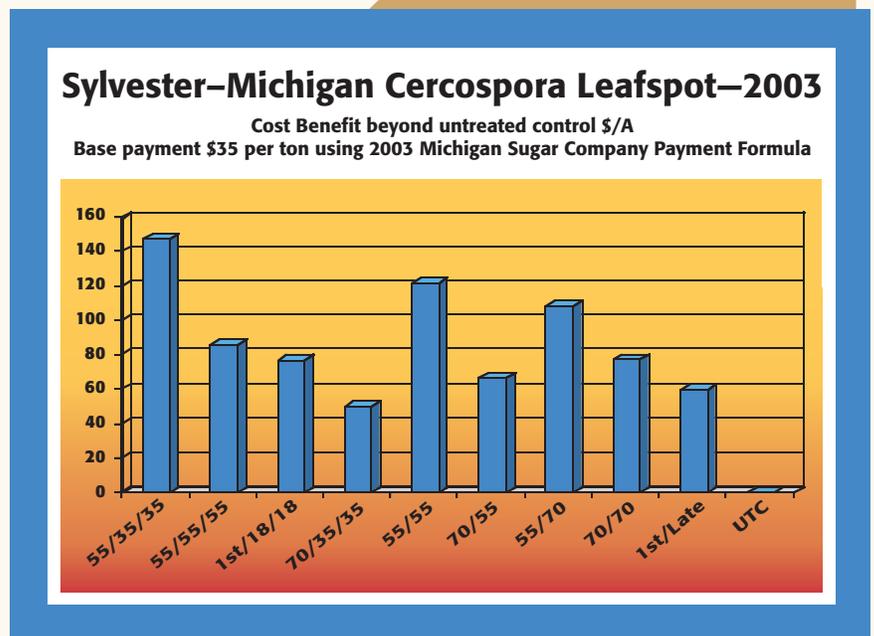


Figure 2. Cost benefit beyond untreated control. 2003 payment plan with an estimated base payment of \$35/ton minus cost of fungicides and \$5/A cost of application. Fungicide cost based on Sugarbeet Advancement Newsletter 2003 "Cercospora Leafspot: Identification and Control."

Annual MEETING

Michigan Sugar Company's annual member meeting was held on Tuesday, January 13, 2004, at Curtiss Hall (Saginaw Valley State University). Over 300 shareholders, employees and guests heard reports from company officials. Company financials were reviewed by Denis Boissonneault, chief financial officer. Tom Zimmer, chairman of the board, spoke about setting high goals and continuing to rewrite the record books by working together.

The competitive landscape was discussed by president and chief executive officer, Mark Flegenheimer, and what actions Michigan Sugar Company must take to remain strong. Marketing updates were given by Imperial's Barry Brown on sugar and Midwest Agri-Commodities' Chuck Hufford regarding by-products.

Special guest, Congressman Dave Camp, told the audience he was extremely disappointed with the Bush Administration's decision to include sugar in CAFTA and he pledged to work with the industry to make sure safeguards were in place to prevent any damage to the sugar industry from CAFTA.



MICHIGAN SUGAR CO.

WELCOME DR. CHRISTY SPRAGUE NEW WEED SCIENTIST AT MICHIGAN STATE UNIVERSITY



We are delighted to announce that Dr. Christy Sprague has joined the Weed Science

Group at Michigan State University and will help address weed management issues in sugarbeets. Christy is a Michigan native who grew up on a part-time cash crop farm in Shiawassee County. She received her B.S. degree in Crop and Soil Sciences from Michigan State University and had the opportunity to participate in two summer internships with BASF Corp. She also worked as an undergraduate research assistant in the Weed Science Group for four years. Christy went on to earn a M.S. degree in Agronomy from the University of Illinois, where she characterized ALS-resistant weeds present in Illinois. In 1999, Christy earned her Ph.D. degree from the Department of Crop and Soil Sciences at Michigan State University while conducting research on "Herbicide Tolerance and Weed Control in Corn with Isoxaflutole," which was a new corn herbicide being developed at the time. Christy then joined the faculty at the University of Illinois as an Assistant Professor

and Extension Specialist. For the next four years, her research focused on weed management systems in corn and soybeans with an emphasis on weed/crop interactions.

Christy joined the faculty in the Department of Crop and Soil Sciences at Michigan State University in September. Her primary responsibilities will be in the area of weed management in sugarbeets, soybeans, and dry edible beans. She will be a regular contributor to the MSU Field Crops Advisory Alert (CAT alerts) and will be speaking at numerous grower meetings throughout the state. This season, Christy's research in sugarbeets will focus on furthering the adoption and development of postemergence herbicide applications based on growing degree days (GDD) and optimizing weed control and sugarbeet tolerance with Dual applications. She will also be working with Steve Gower, Weed Diagnostician, on characterizing ALS-resistance in kochia that is invading some of Michigan's sugarbeet fields.

We are looking forward to, and welcome, the help and expertise that Christy is bringing to our industry, our growers and our growing areas. 🌱

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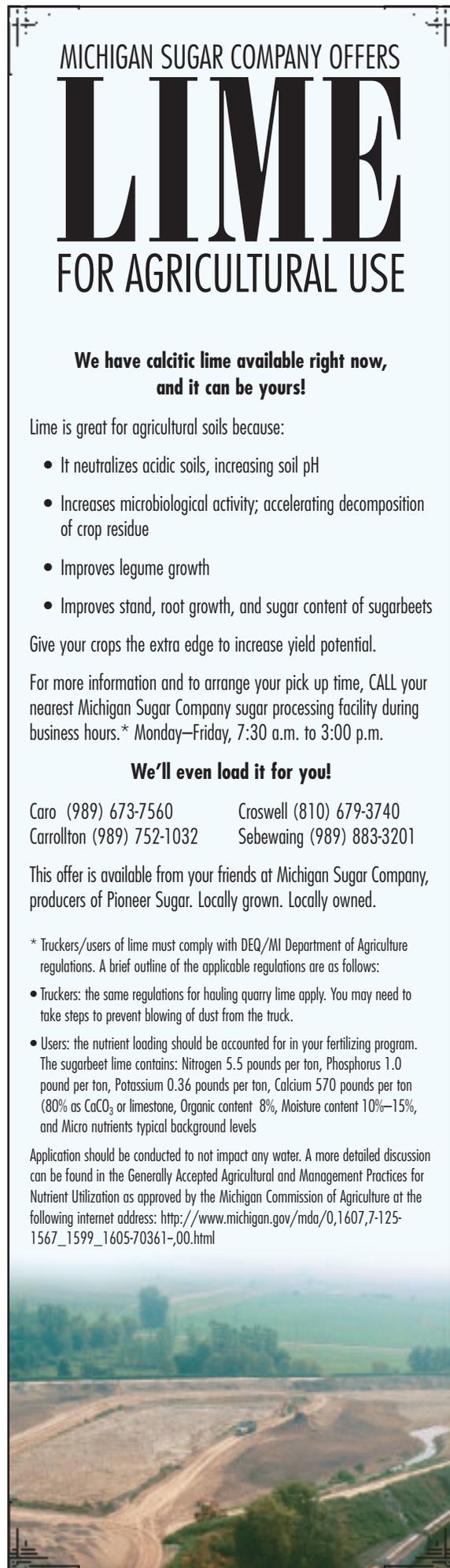
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- Truckers: the same regulations for hauling quarry lime apply. You may need to take steps to prevent blowing of dust from the truck.
- Users: the nutrient loading should be accounted for in your fertilizing program. The sugarbeet lime contains: Nitrogen 5.5 pounds per ton, Phosphorus 1.0 pound per ton, Potassium 0.36 pounds per ton, Calcium 570 pounds per ton (80% as CaCO₃ or limestone, Organic content 8%, Moisture content 10%–15%, and Micro nutrients typical background levels

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





raising quality



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Michigan Sugar Company
Michigan State University
Sugarbeet Advancement

*Left: Fresh, well-topped sugarbeets in
Harold Blaine's field east of St. Charles, Michigan.*

These articles summarize a great deal of research and information. To learn more, follow the links from our website www.MichiganSugar.com (Links > Agricultural Links).

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MANAGEMENT PRACTICES FOR PRODUCING HIGH QUALITY BEETS



By Steve Poindexter, Sugarbeet Extension Agent, Michigan State University, and Jim Stewart, Michigan Sugar Company, Manager of Research.



With the potential development of a quality-based beet payment, growers should closely examine ways to improve the quality of their sugarbeet crop. The Michigan Sugar Company Agriculture Laboratory (MARL) measures percent sucrose, percent clear juice purity and the level of amino nitrogen in your sugarbeet samples. At the present time, a grower's payment is based on tons and is factored by percent sugar. A true quality payment would be based on recoverable white sugar per ton (RWST) and place a stronger emphasis on clear juice purity and percent sugar. Amino nitrogen measures the amount of nitrogen compounds in the beet and is an indicator of proper nitrogen management by the grower. Most of the management practices that a grower employs to produce high-yielding crops and increase root yield will also improve the quality of the sugarbeets.

Factors affecting sugarbeet quality have been some of the most widely studied research topics. The importance of producing high-quality sugarbeets is not only important economically to the producers, but also to the processors in extraction efficiency and ultimately profitability. Putting together a management program for high-quality beets is somewhat like putting together a jigsaw puzzle. There are many components that need to be pieced together to get to the ultimate finished product. Some of these pieces are more important to quality than others, but all add to our ultimate goal of producing high-quality beets with optimum tonnage and recoverable sugar per acre (RWSA).

Left: Betty Blaine defoliating sugarbeets in preparation for the beet harvester.

TABLE 1

Effect of Priming*

Treatment Name	RWSA	Actual Yield (T/A)	RWST	% Sugar	Population 100 ft. Row		
					10 Day	20 Day	30 Day
PAT Pellets	6357	24.55	261	18.5	81	138	160
Standard Seed	6024	23.35	258	18.3	44	113	135
Average	6191	23.95	259	18.4	62	126	148
LSD (5%)	n.s.	.8	n.s.	n.s.	30	n.s.	24

Comments: All Nine Locations, 1998–1999–2000–2001
 * PAT-Germain's Technology Group

TABLE 2

Influence of Sugarbeet Stand on the Yield and Quality of Sugarbeets • Saginaw, MI, 2002

Stand	Tons	%Suc	%CJP
30 to 50	20.0	15.8	90.9
70	23.5	16.4	91.5
90-100	24.1	16.7	91.6
150	25.7	16.8	91.9
200	23.7	17.0	92.3
LSD:	1.8	0.54	0.97

Michigan Sugar Company small plot trial. Some small beets fell through the harvester, impacting the higher population treatments on most.



This article will address the factors which influence sugarbeet quality and will provide guidance for improving that quality.

PRIMED SEED:

Research indicates that planting earlier and achieving optimum populations will improve beet quality. Michigan research conducted over four years at nine locations comparing primed seed to non-primed seed showed a trend toward improved sugar by 0.2%, a significant improvement in yield of 1.2 tons, faster emergence and improved stands (See Table 1). Primed seed greatly improves speed of emergence under cool soil conditions and can improve stands if emergence occurs before a hard crust occurs. Michigan research indicates a benefit to priming in six out of nine trials. Research results in other beet producing areas closely resemble that of ours.

PLANT POPULATIONS:

Higher plant populations have been shown to produce higher yielding and higher quality sugarbeets. Michigan Sugar Company crop records from 1997 through 2001 show that the tons per acre, percent sugar and percent clear juice purity increased significantly with increases in the sugarbeet population. Similar results were

obtained from a replicated small plot trial conducted by Michigan Sugar Company in 2002 (See Table 2). Percent sugar and percent clear juice purity increased in this trial when going from a poor stand to an average stand and finally to a favorable stand. Many factors are related to achieving a good uniform sugarbeet stand including weather, seed spacing, variety selection, soil quality, etc.

NITROGEN MANAGEMENT:

Nitrogen is the most important element that growers apply to their sugarbeet crop and is required in the largest amounts. Adequate levels of nitrogen must be available to sugarbeets at the early growth stages to promote rapid growth and canopy development. Adequate supplies of nitrogen are also needed throughout the summer months to maintain the canopy and to increase the root size. However, in the fall, the key to maximizing sugar yields is for the leaves to begin yellowing as the sugars are transported to the root. For this to occur, the nitrogen available to the sugarbeet plant needs to begin running low late in the season. Excessive amounts of nitrogen late in the season will encourage vigorous leaf growth and less sugar will be transported to the roots. Too little nitrogen

during the growing season will result in reduced canopy growth, premature yellowing and reduced root yields. Recent nitrogen fertility research conducted in Michigan has demonstrated that optimum sugarbeet yields can be achieved by applying from 90 to 125 lbs. per acre of nitrogen. Replicated strip trials conducted by Sugarbeet Advancement in 2003 illustrate the relationship between nitrogen fertilization, root yield and quality (See Table 3, next page). This data suggests that root yields are not increased by applying more nitrogen than is needed; however, percent sugar and percent clear juice purity are negatively affected by increasing nitrogen rates above optimum levels. By following recommended nitrogen rates and by applying their nitrogen during the early growth stages of the sugarbeet, growers will be able to grow a high-yielding and high-quality sugarbeet crop.

VARIETY SELECTION:

Michigan Sugar Company conducts an ongoing sugarbeet variety improvement program designed to provide Cooperative members with the best available sugarbeet varieties. In virtually every trial there are significant differences between varieties with respect to root yield, percent sugar and

TABLE 3

Influence of Nitrogen Fertilizer on the Yield and Quality of Sugarbeets in Michigan. Six Sugarbeet Advancement Trials—2003

Nitrogen Rate	Tons/Acre	% Sucrose	% CJP
Low (81)	21.75	19.10	94.17
Medium (129)	21.58	18.86	93.98
High (193)	22.00	18.57	93.48

Six replicated strip trials were conducted in 2003. Each location had a low, medium and a high nitrogen rate. The average low rate was 81 lbs, medium was 129 lbs and high was 193 lbs.

TABLE 4

Response of Quadris 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	7	5042	5366	19.87	20.75	17.65	17.88	\$41
Medium	4	4760	5213	19.62	20.77	17.38	17.57	\$57
Heavy	3	2979	4269	11.91	17.15	17.00	17.43	\$164

Advancement Summary—2001–2002–2003 (14 Trial Locations)
*Average Gross Revenue Enhancement Compared to Un-Sprayed Check.

percent clear juice purity as well as other important traits. The information is widely available in time for growers to decide which varieties to plant. Growers should meet with their agriculturist and go over the Michigan Sugar Company research results as well as the Sugarbeet Advancement trials and choose the varieties that are most suitable to their particular situations.

RHIZOCTONIA CROWN ROT:

Rhizoctonia Crown Rot in Michigan is estimated, on average, to reduce sugarbeet yields by at least one ton per acre. That yield loss alone is equal to \$7 million of lost grower revenue. This estimate may be conservative with documented yield losses of up to 13 tons per acre. Quality of sugarbeets is also affected by Rhizoctonia. Research over three years and 14 trials shows a positive yield effect of controlling Rhizoctonia infections. Research indicates that a single application of Quadris fungicide applied at the six- to eight-leaf stage can improve beet tonnage and quality. Depending on disease severity, yield improvement generally ranges from one to five tons per acre and improves sugar content from 0.2 to 0.4 percent (See Table 4). These yield enhancements improve gross revenue from \$41 to \$164 per acre. Managing Rhizoctonia through rotation,

variety, Quadris and improved soil quality have a large impact on reducing Rhizoctonia levels and improving recoverable white sugar per ton (RWST).

CERCOSPORA LEAFSPOT:

Worldwide, Cercospora Leafspot is ranked as one of the top detrimental diseases to yield and quality of sugarbeets. To control Cercospora effectively, fungicide applications ideally should begin just prior to any sign of disease. After the first application, regular spray programs should continue to minimize disease impact. Cercospora that infests plants early will significantly affect tonnage and quality. Late season infections will largely impact quality. Always remember, the first fungicide application is most critical and the best materials should be used first. Michigan growers in 2004 are very fortunate to have the BeetCast spray prediction model. Eight research trials conducted in 1999 and 2000 show the negative impact of uncontrolled Cercospora. Research indicates Cercospora infections can reduce recoverable white sugar per acre (RWSA) by 1,098 lbs., yield by 2.8 tons, sugar content by 0.8% and clear juice purity by 0.5% (See Table 5).

WEED CONTROL:

Sugarbeets grow slowly for the first few weeks after emergence

and are easily out competed by weeds for water, nutrients and sunlight. Uncontrolled weed growth will crowd out sugarbeets, stunt their growth and cause an irregular stand. Root yields can be reduced drastically by weeds; however, percent sugar and clear juice purity can also be affected. Weeds at harvest time also reduce the effectiveness of the defoliator and cause storage problems in the piles. When looking over multiple weed control trials there are definite trends towards lower clear juice purity and lower percent sugar when weeds are not properly controlled.

PLANTING AND HARVEST DATES:

Numerous trials have demonstrated the advantages of planting sugarbeets early. Early plantings generally improve sugarbeet emergence, in part by lessening the effects of seedling diseases and soil crusting. The advantages of planting early far outweigh the disadvantages (primarily the chance of a killing frost). Research conducted by Michigan Sugar Company in 1998 demonstrates the effect of planting date on sugarbeet yield and quality. As the planting date was pushed back, yields and quality dropped dramatically. Harvesting sugarbeets later in the season will also increase the chance of having a high-yielding and high-quality crop (See Table 6).



Left to right: The devastating final effect of *Rhizoctonia*; close up of a single *Cercospora* leafspot; a very poorly topped sugarbeet field.

DEFOLIATION:

Complete defoliation of sugarbeets will improve both percent sugar and clear juice purity. Recent research indicates that proper defoliation will achieve a 0.5% improvement in percent sugar and 0.5% improvement in clear juice purity (See Table 7). Proper defoliation begins at planting. Seed spacing is extremely important. Plants that are evenly spaced will improve topper performance. Optimum plant populations, pelleted seed, removing seed tube inserts and yearly planter test stand evaluations will improve plant spacing significantly. Topper adjustment, proper ground speed and maintenance will all improve topping. It is generally agreed 3.5 to 4.0 mph., or slower, will improve defoliation and beet quality. Remember, a poorly topped beet also decreases storability.

EFFICIENCY—THE KEY TO OUR FUTURE:

The Cooperative is off to a great start. We have had excellent crops the past two years, the four factories have run well and the pack has been up. It seems that many of our concerns are now political—free trade issues, sugar sales quotas, etc. It is not likely we will be improving our profitability through increased acreage; at least not in the foreseeable future. Continued success must come through improved efficiency, both on the farm and in the factories. Growers and Michigan Sugar Company employees need to be on the same page. The agricultural staff and the entire company have a renewed focus on quality; the agricultural staff on bringing in a high-quality crop and the factories in operating efficiently. As growers, the production of high-quality sugarbeets is essential, both individually and collectively. We have the tools to do this. Improvements are coming each year in the form of better varieties, improved disease control (i.e., new fungicides and BeetCast) along with other agronomic advances. Our agriculturists have access to the latest information. They are your best, unbiased source. Their only vested interest is in improving the profitability of the cooperative and its growers. Consult with your agriculturist, consider Sugarbeet Advancement information and use these tools to produce a profitable, high-quality crop. It is in everyone's best interest. 🌱

TABLE 5

Cercospora Leafspot Fungicide Trials

	RWSA	T/A	% Suc	% CJP
Treated	7267	29.0	17.6	93.0
Untreated	6169	26.2	16.8	92.5
LSD (P = .05)	284	0.8	0.4	0.2
CV	3.6	2.5	2.0	0.2
Grand Mean	6718	27.6	17.2	92.7

Eight Sugarbeet Advancement Trials (1999–2000)
The Average Number of Fungicide Applications for all Eight Trials was 2.88

TABLE 6

Effect of Planting and Harvest Dates on Sugarbeet Yield and Quality • Saginaw, MI 1998

		Tons	% Suc	CJP
Planting Date	24-Apr	21.8	16.8	93.5
	14-May	21.1	16.6	93.3
	03-Jun	12.4	15.3	92.2
Harvest Date	24-Sep	19.3	16.3	92.4
	07-Oct	20.9	18.0	92.5
	22-Oct	21.7	18.2	92.2

Summary of Michigan Sugar Company small plot trials conducted near Saginaw in 1998.

TABLE 7

Effects of Defoliation on Quality*

Treatment	RWST	% SUCROSE	% CJP
Complete Defoliation	253	17.7	93.5
Poorly Defoliated	244	17.2	93.0

* Average of three studies

Sugarbeet Advancement - 2000

THOUGHTS ON NUTRIENT MANAGEMENT AS YOU PLAN FOR 2004



Dr. Carrie Laboski, Crop & Soil Sciences, Michigan State University

NITROGEN MANAGEMENT

With regard to nitrogen (N), the basic MSU recommendations remain the same; apply 4 lb N/a for each expected ton of yield. Thus, if the realistic yield goal for your field is 20–25 tons, the recommended N rate is 80–100 lb N/a. We are currently recommending that beets grown after corn should receive an additional 30 lb N/a. This additional recommendation is based on the fact that a majority of the research that went into developing the N recommendations was for beets following beans. Because corn is not a legume, it is likely that additional N is needed for beets after corn. My research results over the past two years support this recommendation.

A sugarbeet needs the majority of its N early in the season to obtain canopy closure and then a relatively small amount is required for canopy maintenance. Data from my starter fertilizer and N management studies suggest that having adequate N early in the season is important for the crop to

get a good start. Plots which had 30–40 lb N/a applied in a starter fertilizer with an additional 70–80 lb N/a applied at sidedress yielded more and had greater recoverable sugar compared to plots which had the same total amount of N applied only at sidedress. At some locations, yield and recoverable sugar were greater when all of the N was applied preplant or was split between starter and sidedress compared to when all of the N was applied at sidedress. It is important to keep in mind that the optimal timing of sidedress N application is at the 4 true leaf stage. Sidedressing later, particularly late June, would probably have more of a negative impact because the young plants would not have as much N for early growth and late season N reduces sucrose content.

As you know, over application of N results in reduced sucrose content and subsequently lower payments. Over the past two years at ten locations, I have identified three grower fields which did not respond positively to any amount of N fertilizer. At these locations, yield was not increased by N fertilization, and sucrose content and clear juice purity were decreased. For research purposes, these fields are termed non-responsive. Depending on the

overall yield level of the field, reduction in sucrose content, and cost of N applied, income losses could range from \$25 to \$100 per acre! The crops previous to beets in these non-responsive fields were dry beans and soybeans. However, not all locations, where soybeans or dry beans were the previous crop, were non-responsive. My current research program is seeking a way to identify these fields by soil test. At this point, a potential indicator of a non-responsive field is one with a soil organic matter level greater than 3.2%. However, I do not have enough information upon which to base any recommendations regarding N rate and organic matter. If your organic matter levels are greater than 3.2%, your beets follow dry beans or soybeans, and your sucrose contents are less than company average, consider consulting with your company agriculturist, Steve Poindexter, or myself about experimenting with reduced N rates.

STARTER FERTILIZERS

There is increasing interest in the use of liquid fertilizers applied with the sugarbeet seed at planting. This type of starter fertilizer placement is called: in furrow, with seed, or pop-up. Traditionally, this has not been recommended, but

SBA nitrogen field trial near Sebewaing, at harvest time, illustrating the canopy color, at left, of too much available nitrogen versus the appropriate amount.



RECOMMENDATION ON STARTERS: If soil test P is >40 ppm, starters do not need to contain P2O5. Use 30 to 40 lb N/a in a 2 x 2 band for good early season growth; apply Mn in this band if needed/wanted. If you want to experiment with liquids in furrow, do so on replicated strips in the field. Do not experiment on a large scale. Assess the impact of the liquids by taking stand counts and measuring yield and quality. Do not judge starter performance solely on how the plants appear.

with the advent of low salt liquid solutions, in furrow applications may not be as risky as with older liquid formulations. Adding to growers' interest in the practice is the fact that the Minnesota-North Dakota growing region has had some recent success with low rates of 10-34-0 applied in furrow. However, we must remember that soils in that region test low to very low in available P, whereas our soils typically test above agronomical optimum.

Last year, I set out a study with two objectives: 1) determine if sugarbeets grown on high P testing soils respond to starter fertilizer; and 2) determine if placement of starter fertilizer impacts emergence, time to canopy closure, nutrient uptake, and root yield and quality. Two locations were selected which had soil test P levels that are representative of the sugarbeet growing region in Michigan. Soil test information is provided in Table 1. Starter fertilizer treatments were: no starter; 30 lb N/a in a 2x2 band; 20 lb P2O5/a in a 2x2 band; 30 lb N/a + 20 lb P2O5/a in a 2x2 band; 2, 3, or 4 gal/a of 10-34-0 in furrow; and 4.5 gal/a of 6-24-6 in furrow. The sugarbeet variety Hilleshog E-17 was planted at a rate of 52,200 seeds/acre in 30-inch rows on April 24, 2003 at both locations. Plots were six rows wide and 50 feet long. Sugarbeets were harvested from 30 feet in each of the center two rows. Saginaw was harvested on October 14 and Gratiot was harvested on October 27. Harvested roots were analyzed for sugar content and clear juice purity.

Stand counts were taken at 10, 20, 30, and 40 days after planting. At Gratiot there were no significant differences in emergence between treatments. However, at Saginaw, liquid fertilizers applied in furrow resulted in reduced stands. Canopy closure occurred at the same time in all treatments. There were no significant differences in nutrient uptake at six or eight weeks after planting at either location.

There were significant differences in yield at Gratiot, but not at Saginaw. At Gratiot, the two lowest rates of 10-34-0 produced the greatest yield, but they were not significantly different than the highest rate of 10-34-0 or banded N treatments. There were no differences in beet quality and subsequently recoverable white sugar per acre (RWSA) at Saginaw. However, at Gratiot, treatments which had P in a 2 x 2 band had the lowest sucrose content. The two lowest rates of 10-34-0 produced the greatest RWSA, but they were not significantly different than the highest rate of 10-34-0 or banded N treatments. The control, P only, banded N+P, and 6-24-6 treatments had the lowest RWSA.

SUMMARY:

- Sugarbeet yield did not respond to P fertilizer. This

could be expected because of high soil test P levels.

- Liquid fertilizers applied in furrow may reduce stand; though the results were not consistent between locations. The early part of the 2003 growing season was wetter than normal. Thus, I am concerned that if stand reductions occurred during wet conditions, we may see more stand reductions under drier conditions.
- The type and placement of starter fertilizer did not impact canopy closure or early season nutrient uptake.
- At one location, yield and RWSA were positively impacted by 10-34-0 applied in furrow, but were no different than banded N. At the other location, yield and RWSA were not impacted by starter fertilizer.
- The liquid fertilizer applied in furrow did not improve beet quality. At one location, it appears that applying P2O5 in a 2 x 2 band on high P soil resulted in lower sucrose contents.
- This data suggests that N in a starter fertilizer is probably more important than P2O5 when soil test P levels are above 40 ppm.

TABLE 1

Soil information for the starter study.							
Location	Soil	P	K	Ca	Mg	pH	OM
		ppm					%
Gratiot	Parkhill loam	64	260	2458	490	7.7	2.6
Saginaw	Mistequay silty clay loam	57	301	3077	828	7.8	2.5

PRESSED BEET PULP: MANAGERS LOVE IT! CATTLE LOVE IT!



By Dennis Montei, Agricultural Manager, Sebewaing District

Michigan Sugar Company has been actively marketing pressed beet pulp as a livestock feed alternative for several years. The cost of energy to dry the pulp has been steadily increasing while the price of pulp pellets has not. By selling pressed pulp directly to local livestock operations, the company can realize a cost savings and provide a convenient, nutritionally attractive feed product. Listed below are comments from people who have been utilizing this feed source for their cattle. The major overall take-home point is: **“Feed pressed pulp to your livestock—they will love it!”**



Bill McPhee produces replacement heifers and typically feeds 1,700 daily. His operation is near Kinde, Michigan, and he has used pressed beet pulp for three years.

- “Our heifers like pulp better than corn silage!”
- Normal feed ration is 50% silage and 50% hay
- Less silage is used when pressed pulp is available; 37.5% pulp, 12.5% silage and 50% hay
- Stores into September and keeps as well as corn silage
- Energy value is equal to corn silage
- Protein is 2% higher
- Easy to obtain during the five-month-long beet processing season, while corn silage is available during corn silage harvest season only
- Corn silage is harder to obtain locally than pressed pulp
- Pulp costs less than corn silage
- Hauling and dumping pulp during cold weather has not been a problem
- Able to haul 40-ton loads
- Moisture content guaranteed to be less than 75%; currently averaging 72%
- Packs and stores well in a bunker silo
- Cuts down on storage capacity needs



Larry Konkel uses pressed beet pulp as a feed alternative for his beef cow herd. His operation is near Ubly, Michigan, and he has been using it for five years.

- “My cows love the pressed pulp! I can hardly get the wagon into the feed yard. The cows are so eager to eat, they surround the truck.”
- Less work than silage or hay
- Protein higher than corn silage
- Convenient, loads available whenever needed
- Lower cost than hay or corn silage



John Verhaar has utilized pressed beet pulp for his 1,500 milk cows near Bad Axe, Michigan, for the last five to six years.

- Alternative source of energy
- Fits well in a dairy ration
- Digests well
- Palatable—the cows really like it
- Equal cost to corn silage
- Nice product to have available
- Helps balance the feed ration



Loading pressed beet pulp at the factory.



Jim Osentoski feeds 300 head of feeder cattle near Ubyly, Michigan. Over the past 10–12 years he has realized the benefits and advantages of pressed beet pulp.

- “Most farmers feed 100% grain. I’m feeding a lower cost blend to finish my feeders.”
- Stretches my corn silage
- Feeders love pressed pulp
- Equal cost to corn silage
- Stockpiles and stores well
- Conveniently obtained throughout the beet campaign
- Blends with 50% high moisture grain, 30% corn silage, 20% beet pulp
- Blends, mixes, and handles well
- Makes a balanced ration

As you can see, utilizing pressed beet pulp locally is good for your cattle, good for your operation, good for your local sugarbeet cooperative, and good for the environment by reducing the use of precious energy resources. 



HOW TO PURCHASE PRESSED PULP:

- Contact Mary Smith at 989-799-7300, ext. 3521 to place orders and determine the pickup location. Orders for specific tonnage must be placed two days prior to delivery to ensure availability.
- Loading will normally be scheduled during daylight hours, Monday–Friday. Specific loading hours for each factory can be determined when ordering.
- Payment will be due 15 days following an invoice and Michigan Sugar Company will not continue delivery if payments are late. All trucks will be weighed at the factory to determine volume sold.

Guaranteed Analysis (Wet Basis)

Crude Protein	Minimum	1.33%
Crude Fat	Minimum	0.04%
Crude Fiber	Maximum	3.83%
Moisture	Maximum	75.00%
N-Free Extract	Minimum	8.67%
Ash		1.50%

Composed of sugarbeet residue after extraction of sugar.



2003 Season Pictures—For the Record





CO-OP FINANCIALS

AN UNDERSTANDING, PART TWO



*Denis
Boissonneault,
Chief Financial
Officer*

EQUITY CAPITAL FOR COOPERATIVES

In our last article, we discussed the different sections of the balance sheet and statement of operations. You will recall that part of our balance sheet includes the Patrons' Equity Section. Our discussion will now focus on patrons' equity.

There are three primary ways that members provide equity to their cooperative. These are direct

investment, patronage and per-unit retains.

DIRECT INVESTMENT

Direct Investment refers to cash purchases of membership certificates, common and preferred stock. At the formation of our cooperative, the patrons directly invested \$25 million of capital in return for a common share of stock and patron preferred stock based on the number of acres the patron purchased.

Most cooperatives require a member to make a direct investment when joining a cooperative. Common stock conveys to the owner the right to vote on matters submitted for decision to the

cooperative membership. The owner of common stock is usually referred to as a member of the cooperative.

Direct investment by members often needs to be supplemented with patronage and per-unit retains, especially when a cooperative is newly formed.

PATRONAGE

While cooperatives are sometimes characterized as businesses that operate "at cost," few, if any, can do so on a day-to-day basis. Rather, cooperatives seek to generate income that exceeds expenses on an ongoing basis. Then, usually after the close of the fiscal year, they return earnings



from business conducted on a cooperative basis (“margins”) to the persons responsible for the business generating those earnings (“patrons”). These returns, based on the amount of business each patron does with the cooperative during the year, are called patronage refunds. The net result is “at cost” operations.

Business conducted on a cooperative basis is called patronage sourced. Earnings realized on patronage-sourced business may be returned to the patrons as a cash patronage refund. This patronage refund may also be retained as additional equity in the cooperative.

Patronage is an important source of financing for cooperatives. Members usually elect to leave a portion of any refund in the cooperative to help keep its operations on a sound financial basis. The retained portion of the patronage refund is allocated to members’ equity accounts and paid out at a later date.

The special nature of a cooperative provides an opportunity to member-users to aid in the financing of the business as an alternative. A responsible cooperative, acting collectively for members, will develop a financing and ownership transfer plan that is equitable to members individually and that is in keeping with cooperative principles.

Financing the cooperative through reinvestment of patronage

Left: Denis Boissonneault reviews the Cooperative’s financials at Curtiss Hall.

refunds is a simple and straightforward way for members to finance according to use. Future equity redemption will serve to keep the cooperative’s ownership in the hands of the current users.

PER UNIT RETAINS

Cooperatives that market products produced by their members have a third means of acquiring equity capital, that being per-unit retains. Per-unit retains are capital investments based on either the number of physical units handled by the corporation (tons, for example) or a percentage of sales revenue. Per-unit retains are deducted from the sales proceeds due the members from the cooperative.

TAX TREATMENT

Tax treatment of per-unit retains and patronage refunds are generally the same. In both situations, the tax consequences must be balanced in the best interest of the cooperative and the patron.

Proper tax treatment must be determined by the cooperative, with the assistance of their independent accountant, within 8¹/₂ months of the end of the tax year.

When the Board of Directors determines to include the value of the certificates in current income, the retained funds are deductible by the cooperative in the year the funds were acquired and must be included in the taxable income of the patrons in the year they receive the required written notice, which is referred to as a “qualified” patronage or per-unit retain certificate.

If the Board of Directors determines the patronage or per-unit retain, for various reasons, do not meet the qualified status, the written notice is called a “nonqualified” patronage or per-unit retain certificate. In this case, the cooperative would include the face value of the certificate in current taxable income and recover the taxes paid at the time of redemption. The patron would not report the retained amount as income until the unqualified certificate was redeemed by the cooperative.

SUMMARY

As we have discussed, cooperatives have flexibility in accumulating equity to meet their needs. An understanding of the alternatives is especially important when allocating the patronage-based sources of equity, patronage and per-unit retains.

Direct investments usually are made to purchase membership equity, common and preferred stock. Patronage and unit retains are used to increase the equity and long-term financial stability of the cooperative.

The purchase of our cooperative was a highly leveraged transaction, incurring a large amount of debt in addition to our capital. Successful sugarbeet cooperatives have been able to increase their equity over time through the use of the methods discussed. Our cooperative will need to employ these methods into the future to continue to improve our financial strength and stability for the long term. 🌱



Inset pictures (left to right): A CAT loader moves beets from the storage piles to the wet hopper at the Croswell factory; raw juice from the diffuser and thin juice after filtration; sliced beet cosettes and beet pulp pellets. Main photo: Looking inside the granulator where sugar is cooled, dried and conditioned before packaging or storage.

BASIC OPERATIONS FOR THE PRODUCTION OF BEET SUGAR



*by Herb Wilson,
Vice President of
Operations*

Processing a sugarbeet into pure granulated

Pioneer brand sugar requires a lot of equipment and energy as well as the skill of our employees. The process consists of a series of physical and chemical separations with the object being to preserve the natural sugar and remove all other materials. Following is a brief description of the unit operations, their purpose and how they relate to each other, as the sugarbeet becomes sugar.

PREPARING THE SUGARBEET FOR PROCESSING

The sugarbeets are taken from storage piles by a front-end loader or front-end loader/truck combination and brought to the factory to be placed in the "wet hopper." The wet hopper is a large bin with a stream of water at the bottom and various water jets. The beets exit the bottom of the wet hopper in a trough of flowing water known as the flume. The beets are submerged as they are swept toward the factory. As they are soaked in this water, any soil or unattached plant material begins to loosen. Material heavier or lighter than the beets will tend to settle to the bottom or rise toward the top of the flume.

Various pieces of equipment are used along the way to remove stones, larger weeds and leafy material. The stones are used as fill material or sold for further

processing as landscaping products. After entering the factory, the water is separated from the beets and they are elevated to the upper floor or the entire mixture is pumped to an upper floor and the water is separated at that point.

The beets now enter a large washing tub where a new supply of water is used for a final vigorous washing. As the beets leave the beet washer, they are rinsed in clean warm water to remove any remaining particles. The water used for washing and from the fluming system is screened to remove any remaining leafy material and beet chips that may have been broken off during storage, handling or cleaning. The beet chips and leafy material recovered on the screens are separated with the chips being returned to the process for recovery of sugar and the leafy material being macerated for subsequent use as part of the pulp for animal feed. The main stream of screened water is sent to a pond where the soil settles out. The clarified water is returned to the factory and the valuable soil is later removed from the basin, dried, and taken back to the farm.

BEET SLICING AND EXTRACTION OF SUGAR

The clean sugarbeets are sliced into very thin strips rather like shoestring potatoes. The objective is to expose the largest possible area of sugar-containing beet cells without unduly damaging those cells. Doing so could release unwanted non-sugar substances into the juice and make purification

more difficult. Slicing takes place by forcing the beets against the rotating drum or disc of a slicing machine. The slicer contains many sets of beet knives. Periodically, these knives must be removed from the slicing machine for sharpening. Sharp knives make a cleaner cut and rupture fewer cells. The sliced beets are now called "cossettes."

The cossettes are moved counter-current to a stream of hot water in a large machine called a diffuser. As the mass of cossettes move in one direction and the water in the other, the beet cells are exposed to heat and osmotic pressure to draw out the sugar solution and leave other substances behind. The water, which now contains most of the sugar from the cossettes, exits the diffuser at one end while the de-sugared cossettes exit the opposite end. The sugar-containing water is now called raw juice or diffusion juice and will require purification. The de-sugared cossettes are now termed wet pulp and will be processed into a valuable animal feed.

PULP PROCESSING

The wet pulp is sent to a set of mechanical presses. These machines press the pulp against perforated screens with a tremendous amount of pressure. The water that is squeezed out contains a small amount of sugar and so it is recycled to the diffuser for further recovery. The pressed pulp is made up of the fiber from the sugarbeet, along with other nutritive substances, and is an important local animal feed. For long-term storage,

PRODUCTION OF BEET SUGAR (CONT'D)

or shipment to more distant users, the pulp must have most of the remaining moisture removed and be compressed into pellets. Drying of the pulp is carried out in rotating drums with air heated in a furnace.

PURIFICATION

Raw juice from the diffuser must have most of the remaining impurities removed so that the sugar can be crystallized. Lime and carbon dioxide are generated in a lime kiln by heating calcium carbonate stone. The juice is treated first with the lime and then by bubbling carbon dioxide up through the lime-juice mixture. The impurities tend to adhere to the particles of lime and the carbon dioxide acts to convert and precipitate the lime as insoluble calcium carbonate crystals. The lime particles are settled out in a clarifier while the purified juice is filtered to remove all remaining particles of lime. The settled lime is washed and then dried. The lime becomes an excellent soil amendment and is distributed for use in agriculture.

EVAPORATION

Juice from the purification step is quite thin and consists of much water. The majority of this water is removed by heating the thin juice and boiling it off until the juice becomes considerably thicker. The evaporator station consists of several vessels containing thousands of tubes. Boilers produce steam, which is applied to the outside of the evaporator tubes while the juice passes through the inside. After being filtered again, the

thickened juice from evaporation is now ready to have the sugar separated.

CRYSTALLIZATION AND CENTRIFUGING

Thick juice from the evaporators is boiled again, this time under vacuum in order to reduce energy usage and prevent coloring of the purified juices. The juice is boiled in large vessels containing many tubes that are heated with steam vapors created by the evaporation of water at the evaporator station. When the boiling juice is at the proper consistency, a finely milled mixture of sugar crystals is introduced to act as seed. As the water is boiled off and the solution becomes more concentrated, sugar from the juice comes out of the solution and becomes part of the crystals. The crystals are carefully grown through control of the vacuum, temperature and feed syrup additions.

When the crystals reach the desired size, the mixture of juice and crystals, known as massecuite, is discharged to an agitated holding tank known as a mixer. From the mixer, the massecuite is fed into high-speed centrifugals, in which the liquid is spun to the outer shell, and the crystals are left in the screened basket. The sugar crystals are then washed with pure hot water and are conveyed to the granulator station.

The liquid that was separated from the sugar crystals in the centrifugals is called syrup. This syrup serves as a feed for the "second boiling." Sugar separated from the second boiling is melted

WATER AND ENERGY

Sugarbeets consist of approximately 75% water by weight. About 450 million gallons of water are removed from the beets when processing crops of the current size. As a result, the factory requires little or no source of outside water but does need large amounts of energy to provide the heat for evaporating the water. After the water is removed, a portion is saved to begin processing the next crop and the remainder is treated to required standards and returned to the environment.

and is introduced back into the vacuum pans along with the thick juice from the evaporators. The process is repeated once again, resulting in the production of molasses as the final syrup. The molasses is sold as a feedstock for the fermentation industry, used as animal feed, or in the production of numerous other products. With a special process, additional sugar can be separated from the molasses before marketing the final syrup.

SUGAR DRYING AND CONDITIONING

After leaving the centrifugal station, the damp sugar is sent to the granulators in which the sugar is dried with warm air and then cooled. The dry sugar is conditioned and stored in a sugar silo for subsequent packaging or shipment in bulk trucks or railcars. 🌱



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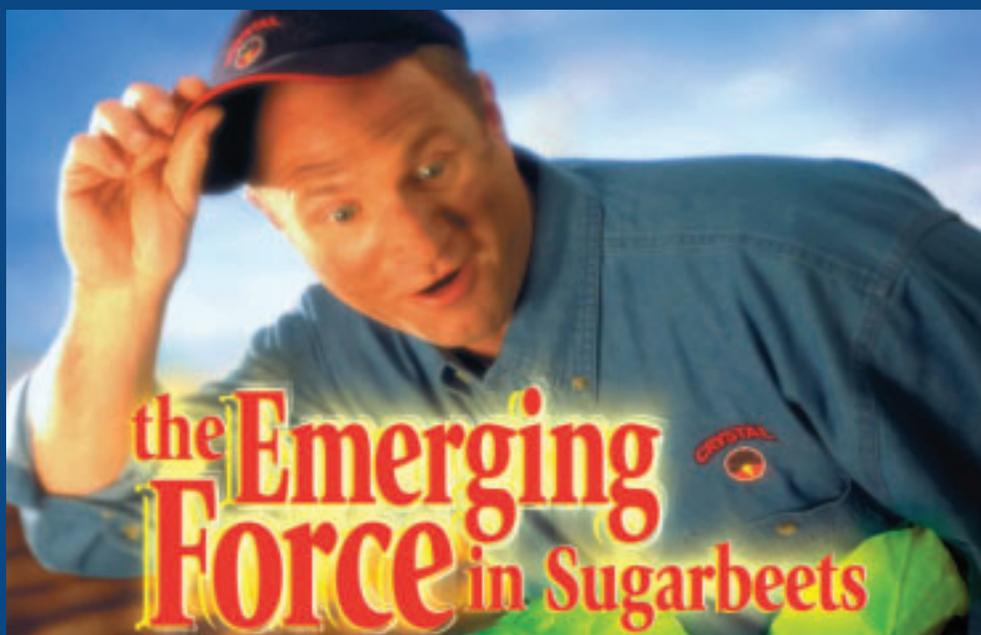


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PLANTERS—CHECK THEM BEFORE SPRING PLANTING



By Dennis Montei, Agricultural Manager, Sebewaing District

Planting is the first and most important step in producing a great crop of sugarbeets. I visited three local farm machinery dealerships and interviewed the planter experts they employ to put this information together. Attention to detail when getting your planter “ready to go” will pay big dividends at harvest. Even though this list has been developed for John Deere planters, many of the items are similar on all brands and models. 🌱



The following is a list of important vacuum seed unit meter items and procedures to pay attention to:

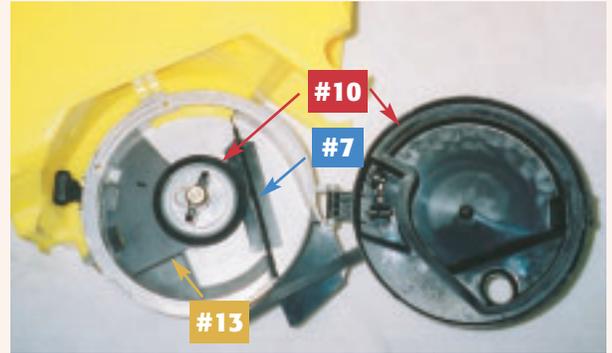
- 1) Inspect vacuum lines, checking for leaks and blow them out with air pressure.
- 2) Install low range vacuum pressure gauge (1–5 in/lbs.) for sugarbeet seed.
- 3) Number each seed unit, seed unit plastic door and seed plate.
 - Keep each unit together labeled with the same number.
 - The parts will wear and fit differently if switched from row to row every time you have them apart.
- 4) Check for warped vacuum seed unit doors and make sure they close correctly.
- 5) Inspect each seed plate, making sure you have the correct one for the seed size you are planting.
- 6) Spray JD Slip Plate on the vacuum side of each plate (the side that faces the door).
 - Be careful. You do not want to plug the seed holes. This will cause less friction and less wear on the vacuum seal. It will also reduce the amount of static electricity that could cause seed to stick and not drop from the plate.
- 7) Check the seed cut off brushes. They should be firm with no gaps or missing bristles. (see photo, Item 7)
- 8) Check kicker wheels (plastic knocker wheels).
 - These do not push the seeds out of the seed plate. They are designed to keep the holes clean.
- 9) Check the plate “drag” by turning each seed unit by hand.
 - It should turn firmly.
 - It should only freewheel approximately half of a turn.
- 10) Inspect the rubber seals in each vacuum seed unit.
 - They should be soft and flexible, not dried out and cracked. (see photo, Item 10)
- 11) Watch for gaps between the seed plate and the seal.
 - All plates have a small amount of warp from the factory and it is normal to see some daylight between the plate and the seal.
 - For sugarbeets, this gap should only be about the thickness of a pocket knife blade.
 - A general rule of thumb, the gap should be less than half the thickness of the seed diameter you are intending to plant.
 - Plates can freewheel more and the plate to seal gap can be larger for “large-size seed” crops like corn and beans.
- 12) When checking seed plates for warp, make sure the warp is in the plate and not a bent shaft in the seed unit.
- 13) The seed gate in the vacuum unit must be in the closed position for planting beets. (see photo, Item 13)
- 14) Make sure that the seed unit drive “dogs” flip and return to drive position.
 - If they seem sluggish or slow in returning to the proper position, spray them with multi-purpose oil.
 - Do not use a spray like WD-40 because it dries out and causes the same problem again. (see photo, Item 14)
- 15) Always close the seed unit cover door with caution. It is very easy to close and latch it with the door in a mismatched position.
- 16) Adjust the vacuum pressure according to the seed size you are planting (i.e., up to about four (4) in/lb. for large jumbo pellets while using sorghum plates).
 - Visit with your planter dealer specialist. He can help you with the correct pressures for different seed sizes and coatings.
- 17) When installing seed hopper with seed unit back on the planter, be sure it is sitting squarely in place and that you latch it down properly.
 - The rubber seal on the bottom of the seed unit should completely cover the top opening of the seed sensor drop tube. This prevents dirt from getting into the top of the seed sensor drop tube. (see photo, Item 17)

I wish to thank Mike Osborn and Bruce Bach from J&D Implement located in Caro and Sebewaing, and Todd Crosby from Bader Brothers in Reese. Thanks also to the dealerships for allowing me the time to interview their employees.



Checklist for general planter items:

- First and foremost: Clean the seed hoppers!
- Make sure seed-opener disks (15" diameter when new) touch or come together:
 - At least 1 1/2" to 2 1/2"
 - Replace when the tapered cutting edge is gone
 - Be sure to check opener bearings also.
- Replace drive chains that are stiff or worn.
- Make sure individual row units move up and down freely to follow the soil surface.
- Check the condition of the tires, tire air pressure, and wheel bearings.
- Check hydraulic hoses for pinch points or leaks.
- Inspect electrical cables and wiring for pinched wires and corrosion on the connectors.
- Check the seed monitor:
 - Drop seeds through each seed tube while someone is waving their hand in front of the radar
 - Monitor should start counting, indicating sensors and radar gun are working and wiring is good
- Grease or oil according to the operator's manual.
- Check hinge pins and bushings on flex frames and folding markers.
- Inspect rear covering wheel bearings:
 - Make sure the wheels are centered on the seed opener trench
 - Check the down pressure of the wheels on the seed trench
 - Adjust to soil conditions
 - This should be checked and adjusted at least daily
- Clean and inspect seed sensor drop tubes (with mild soap, warm water, and a bottle brush).
- Adjust the fertilizer opener disks:
 - Set to run at least 2" to the side of the seed-opener trench
- Straight seed tubes are recommended:
 - They let the seed drop to the bottom of the seed trench
 - Curved tubes (set farther to the rear of the planter) often cause the seed to mix with dirt and consequently seeds do not reach the bottom of the trench (see photo)
- Pellets are largest and cause the fewest problems.
- Consider adding talc to your seed. It lubricates and helps to reduce moisture problems.
- Check seed depth settings frequently.
- Check the fertilizer tube placement if applying fertilizer as a "pop up."
 - Use only recommended fertilizers as "pop up" on or very near the seed.
- Annually check seed units at your local equipment dealer's shop:
 - Or take them to one of Michigan Sugar Company's Seed Can Testing locations
 - Many problems can be solved ahead of time by observing the actual seed drop and spacing characteristics of each unit.
- Review your planter operating manual to be sure you have checked everything for your particular brand and model of planter.



Above: Straight seed tube (left) and straight seed tube insert (right).

grower IN THE NEWS



*By Robert
Corrigan,
Agriculturist,
Croswell District,
Ruth and Verona
Receiving Stations*

Mike Roggenbuck farmed with his brothers for 27 years. In 1962, they raised ten acres of sugarbeets in the Ruth area, located in the Thumb area of Michigan. These were processed at the Michigan Sugar Company factory located in Croswell. Harvesting sugarbeets was accomplished with a secondhand, two-row harvester purchased in Wisconsin. In 1989, Mike, his wife Pat, and their sons, Dave and Doug, formed Helena Valley Farms. Their youngest son, Jim, officially joined the operation in 2000.

The farm operation includes 600 acres of wheat, 2,300 acres corn and 1,000 acres of dry beans. Along with 5,000-plus acres of cash crops, Doug manages their 1,500-head herd of cattle while Dave concentrates on machinery and equipment maintenance, repair and other issues. Their brother, Jim, handles other day-to-day management issues of the operation. Due to the size of the Helena Valley Farms operation, additional help is required. Full-time employees include Mitch Kolar, Paul Gehring and Tom Priemer. Tom is a long-time employee and has worked more than 25 years for the Roggenbuck family.

This past year, Helena Valley Farms raised 1,700 acres of sugarbeets. Planting is accomplished with two 24-row planters. They



Left to right: Dave, Mike, Pat, Doug and Jim Roggenbuck.

utilize narrow, 20-inch-row width technology and a five-inch seed spacing to reach a seeding rate of 62,700 seeds per acre. They place three gallons of 10-34-0 starter fertilizer next to the row at planting time. Their weed control program consists of two to three post-emergence micro-rate applications of the usual herbicides, plus Dual herbicide as a final lay-by treatment. After the beet crop has emerged and is established, it is side-dressed with sufficient anhydrous ammonia to reach the total nitrogen requirements for the growing population. The micro-rate herbicide program has made it possible for them to eliminate cultivation, leaving a healthy and clean crop for harvest.

This past year brought about a significant change for the Helena Valley Farms sugarbeet operation. They purchased a Ropa Tiger self-propelled sugarbeet harvester. It is the first European built Ropa harvester sold in the U.S. This harvester is a one-machine system whereby it removes the tops and lifts the sugarbeets, all in one

pass. It is designed to harvest six 20-inch rows and its 30-ton holding tank capacity means the trucks no longer have to be loaded in the field. This significantly reduces harvest-time soil compaction. Most of the Ropa Tiger systems are monitored and controlled by a computer to assist the operator and make those long 16-hour harvest days seem shorter and less stressful. It is capable of harvesting 80 acres a day in wet or dry conditions with excellent cleaning capacity. One of its major advantages is reduced labor and equipment requirements during harvest; about half what was needed with their conventional harvesting equipment.

Despite the many challenges of a large farm operation, Mike and Pat have found time to be involved in many community activities. Mike is a member of the Harbor Beach United Way Board and has served on the Sandbeach Township Board of Review in the past. He is president of Saint Anthony Men's Club and is serving as a grower director on the local

HELENA VALLEY FARMS NEW EQUIPMENT IN THE OPERATION

Croswell Grower Board. Mike is also a 30-year veteran, Farm Bureau member.

Pat is on the Chemical Bank Advisory Board (Thumb Area). She serves on the Harbor Beach Community Hospital Board of Incorporators and is involved in many of the church activities at Saint Anthony Church in Helena.

Helena Valley Farms went into the 2003 sugarbeet harvest with many uncertainties due to the new sugarbeet equipment and emerged with smiles upon their faces. Their first year with the Ropa Tiger harvesting system can now be deemed a success! 🌱



Ropa sponsored field day at Helena Valley Farms in the Ruth area.



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*By Dave Bailey,
Agriculturist,
Carrollton District,
Breckenridge, and
Greenville
Receiving Stations*

While a sophomore in high school, Wes Federspiel convinced his parents to let him try his hand at farming. Wes' parents gave him a plot of land to start and the next year they bought him a Ford tractor, a two-bottom plow, a disk harrow and allowed him to farm 40 acres. Even though Wes would later work in several different factories and serve in the military, he never gave up on farming. When he returned from the service, he leased some additional land and continued to build his farming operation.

The Federspiel family began by raising registered shorthorn cattle and other livestock. They eventually switched to cash crops as their focus. Wes' cash crop operation consists of approximately 900 acres; with sugarbeets, wheat, corn and soybeans in rotation. A White vacuum planter is used to plant all of his row crops. Minimum tillage is an important feature of his program; however; there is still a place for his moldboard plow even though it does not see a lot of use.

Wes works with his neighbor, Matt Brown of Brown Farms, for sugarbeet harvesting. This arrangement seems to work well for both of them and on occasion you will even see Wes in a beet truck delivering to the Michigan Sugar Company Breckenridge Sugarbeet Receiving Station at Wheeler. Wes

did mention he keeps an older model beet harvester in the barn, just in case its one of those harvests that everyone loves to remember, but hopes they never have to relive!

The Federspiel family is heavily involved in local conservation efforts. With the help of the county conservation district, they have planted thousands of trees and shrubs over the years. The same soil conservation attitude holds true for their farming practices. From wheat stubble to corn stalks, Wes makes it a priority to leave as much residue as possible and plants his sugarbeets after wheat or corn.

Soil organic matter portion retention, maintaining long crop rotations and keeping farm equipment out of fields until soil conditions are favorable takes a lot of management and work. Removal of excess soil moisture is also very important for good soil health and all but 40 acres of their operation are tile drained at two-rod spacing or less. This gives them the advantage of early spring planting on soils that have the physical properties required to support equipment and provide good soil-to-seed contact. Good drainage also facilitates fall harvesting operations. Making sure water ways are clear and maintained free of trash are some of the little details that Wes pays attention to that you might not see, but make a big difference.



Wesley and Norma Federspiel

Wes has also contributed a great deal to his community. He serves on the Edgewood Church of God Board, is a member of the Lafayette Township Board and has been a member of the Gratiot County Road Commission since 1983.

Wes was surprised this past summer when he noticed his parents seated at a table at the Gratiot County Rural Urban Day celebration while he was going through the food line. His parents, John and Inez Federspiel, do not normally attend this event. It is an event that annually attracts more than 2,600 people from across mid-Michigan. A little while later, he found out why they were there this year. The Wesley and Norma Federspiel family of Lafayette Township were chosen as 2003 Gratiot County Farm Family of the Year. The family was chosen by a panel of previous award recipients and was well deserving of the award. As I sat talking to Wes in his kitchen, I could see immediately that his hard work, positive attitude and dedication to family and community are what have made he and his family a huge success. 🌱

NEW ART'S-WAY PROTOTYPE SUGARBEET HARVESTER



By Charles
Neuenfeldt,
Agriculturist,
Carrollton District,
Blumfield
Receiving Station

A new Art's-Way prototype harvester was field tested last fall in Michigan and the Red River Valley. Charles Bauer of Laracha Farms L.L.C. is the harvester's brainchild and helped to design the layout and operation of the individual components. Simplicity, ease of adjustment and a tremendous cleaning ability are the harvester's mainstays. These features are enhanced by an interchangeable header system that allows a producer to harvest eight 30-inch-row beets in the morning and twelve 20-inch-row beets in the afternoon, simply by changing the header.

The front of the machine is a detachable header. It is available in either 6Wide/8Narrow or 8W/12N configurations. It is



Prototype Art's-Way harvester loading a semi-truck at a Laracha Farms field this past season.

referred to as a header because it is easily changed to accommodate the different row spacings. The cleaning area bears some resemblance to a standard Art's-Way 692 lifting and cleaning bed. The grab rolls in the header funnel beets to the center and drop them onto a set of conveyor grab rolls, which perform additional cleaning and move the beets back to the machine's rear-mounted ferris wheel. The ferris wheel lifts the beets onto a belted chain which carries the beets forward into a holding hopper. This hopper has another belted chain that conveys the beets up into the truck.

Both the cleaning bed and the conveyor bed grab rolls have

a single point adjustment for setting "between-roll" clearance. Adjustment for roll clearance can literally be done in minutes. "Nobody is going to adjust these rolls if it is hard to do," said Charlie Bauer. The ease of adjustment on the grab roll clearance makes the harvester more adaptable to changing field conditions and that means less soil trucked to and from the receiving station resulting in lower tares. "We've taken every successful beet cleaning system and incorporated them into one harvester," said Charlie. Field tests have proven that this machine will load the highest possible tonnage while producing rock bottom tares in most any harvestable field condition. Art's-Way management has been so impressed with the performance of this machine, that it will be their only new model produced for 2004. Low tares combined with eight-row-wide digging capacity will certainly make this machine one to watch. 🌱

2003 Crop Update *continued from page 3*

and storing the best possible beet for processing will be our priorities.

Small improvements can have dramatic results. Increasing sugar content by 0.5% will increase sugar production by nearly 200,000 cwt. and gross revenue by over \$4 million. Increasing clear juice purity by 0.5% will increase pack by three (3) pounds per ton resulting in an increase in gross revenue of nearly \$2 million. A half-ton-per-acre increase, without sacrificing quality, produces over 60,000 tons to process and adds an additional \$4 million to gross revenue. All of these small improvements are directly connected to the bottom line, which is passed on to our members.



Aerial view of some of the 713,000 tons delivered to Sebewaing.

Congratulations on a record-breaking crop and campaign in 2003. With continued improvement and additional efforts, our future years can be even better than our first two as a cooperative. 🌱

4-H AND FFA

2003 SUGARBEET PROJECT AWARDS

CROSWELL DISTRICT

The Croswell District held their 4-H and FFA Project Awards Banquet in Sandusky on January 5. There were 75 participants in this season's project resulting in 13 Premier Award recipients and five Prestige Award recipients. Those receiving the Premier awards were; Travis Volmering, Kurt Kirkpatrick, Jesse Grekowicz, Amanda Grekowicz, Crysta Maurer, Rita Gentner, Ashley Roggenbuck, Luke Maurer, Justin Roggenbuck, Courtney Maurer, Brian Furness, Rebecca Gentner and Andrew Gordon. Receiving top honors, Prestige Awards and recognition were; Andrew Kirsch (parents Mike and Kathy), Jared Puwalowski (parents Claude and Denise), Eric Gentner (parents Allen and Debbie Bischer), Laura Puwalowski (parents Claude and Denise) and Sara Volmering (parents Daniel and LaDonna). 🌱

CARROLLTON DISTRICT

This was the first year that the Carrollton and Breckenridge areas combined 4-H and FFA activities. The Carrollton District held their 4-H and FFA Project Awards Banquet at the Crooked Creek Banquet Center in Shields on M-46. There were 14 participants from the Breckenridge area and 33 participants from the Carrollton area, totaling 47 participants competing for the awards. Premier Awards and recognition were received by; Alyssa Brown and Hunter Hrabal from the Breckenridge area; Jackie Albosta, Justin Frahm, Amanda Hecht, Dennis Hecht, Michael Wasmiller, Robert Wasmiller and Stephanie Weiss from the Carrollton area. Receiving top honors, Prestige Awards and recognition were; Josh Gulick (parents Jeff and Denise), Chelsea Stolz (parents Roy and Cindy), Dana Albosta (parents Bruce and Lori) and Daniel Rummel (parents Randy and Dawn Bauer). 🌱

CARO DISTRICT

Caro had 43 participants in the 4H and FFA Sugarbeet Project for the 2003 growing season. There were three 4-H clubs represented; the Pioneers (Roy Knoll, leader), the Tuscola Beetnicks (Viola Bierlein, leader), and the 4-Leaf Achievers (Carl Bednarski leader). Those receiving Premier Awards and recognition were; Kristen Reinbold, Joe Bublitz, Nick Zwerk, Mike Bednarski, Kyle Hecht, Nathan Bednarski, Troy Hecht, Ryan Schian and Eric Houghtaling. Top honors, Prestige Awards and recognition were bestowed upon; Becky Bierlein (parents Stuart and Nancy), Ashley Bierlein (parents Stuart and Nancy) and C.J. Bednarski (parents Carl and Lisa). 🌱

SEBEWAING DISTRICT

This past season, the Sebewaing area had 46 participants in the 4-H and FFA Sugarbeet Project. Participants earning Premier Awards and recognition were; Jason Maust, Matt Sneller, Adam Armbruster, Brittany Armbruster, Chad Goebel, Cody Kurzer, Megan Linzner, Ben Turschak and Sara Stecker. Those receiving top honors, Prestige Awards and recognition were; David Maust (parents Clifford and Marie), Jason Smith (parents Scott and Nancy), Jonathan Maust (parents Clifford and Marie) and Kirck Yackle (parents James and Sheila). 🌱



4-H Prestige Award Winners



Dana Albosta



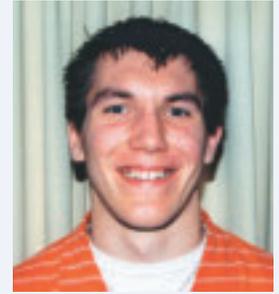
C.J. Bednarski



Ashley Bierlein



Becky Bierlein



Eric Gentner



Josh Gulick



Andrew Kirsch



David Maust



Jonathan Maust



Jared Puvalowski



Laura Puvalowski



Daniel Rummel



Jason Smith



Chelsea Stolz



Sara Volmering



Kirck Yackle



4-H SUGARBEET PROJECT AND SCHOLARSHIPS

MICHIGAN SUGAR COMPANY SCHOLARSHIPS

Michigan Sugar Company offers two scholarships annually; the Albert Flegenheimer Memorial Scholarship (\$2,500) and the Phil Brimhall Memorial Scholarship (\$1,000). High school seniors in public or private schools within our sugarbeet growing area are eligible to compete if they have participated in 4-H or the Future Farmers of America Program and have completed a documented sugarbeet project. All applications must be received before May 1 to be considered for the upcoming school year. For further details and a copy of the official entry form contact your local Michigan Sugar Company agricultural office, or download the application form from our website at www.michigansugar.com. 🌱

MICHIGAN SUGAR 4-H & FFA SUGARBEET PROJECT

Designed specifically for youths in the sugarbeet production areas of Michigan, the 4-H and FFA Sugarbeet Project seeks to promote education and interest in sugarbeets. The program is for all 4-H and FFA members who wish to participate in supervised sugarbeet projects.

Parents should contact their respective agriculturist for details on how to have their children admitted into the project. In order to participate, members are required to be enrolled in an organized 4-H club or FFA chapter, make an exhibit at a county fair, complete an accurate record of labor and agronomic practices (including costs and expected receipts) and must be at least eight years old during the calendar year of the project. At the end of the project, participant projects are graded, judged and awards presented based on the number of participants and their participation in the project. Awards are presented at an end-of-year banquet. 🌱

MICHIGAN SUGAR QUEEN SCHOLARSHIP

Each year, Michigan Sugar Company sponsors the Michigan Sugar Queen Pageant. This year's Michigan Sugar Queen will receive a \$2,000 scholarship awarded in June at the Michigan Sugar Festival held in Sebewaing, Michigan. Two court attendants will also be selected and each will receive a \$1,000 scholarship.

Interested contestants need to complete an application and send it in with a picture by May 21, 2004. Contestants will be contacted with a date for judging and the formal crowning ceremony will take place Friday evening at the Michigan Sugar Festival on June 18, 2004. Anyone interested should contact Barb Wallace at Michigan Sugar Company at (989) 799-7300, or check our website at www.michigansugar.com. 🌱

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SEDEX

THE RED RIVER VALLEY TOUR —AN AGRONOMIST'S PERSPECTIVE



*Corey Guza,
Chief Agronomist*

Last summer, growers and agricultural staff had the opportunity to visit the Red River Valley of Minnesota and North Dakota. The tour ranged from walking fields and visiting farms to going to factories and museums. When everyone arrived they were greeted by hot and sunny weather.

Our first stop was at the Germain's Technology Group (GTG) seed plant where we were able to examine equipment used to prepare sugarbeet seed for planting. From there, we visited beet fields

where everyone was able to observe rhizomania disease symptoms.

The next day we visited with local growers on their farms and toured Keller Welding and Mfg. They specialize in large equipment, up to 72-row sprayers and rotary hoes. Next, we visited the Minn-Dak Farmers Cooperative. They have one of the most modern facilities in the country. On our third day of the trip, we met with the American Crystal Sugar Company staff and board of directors. We visited their factory sites and toured their huge sugarbeet storage sheds. As we rode through the growing region on our way to view research sites, Al Cattanach, the general agronomist for American Crystal,

discussed farming practices in the area. Our final stop for the day was the WIC harvester and defoliator factory. We saw equipment at each stage of the manufacturing process, from sheet metal to finished machines.

Our third day in the Red River Valley started at the University of Minnesota research farm. Then, one of the most interesting stops, we visited with a grower successfully raising 11-inch-row beets. He showed us his harvesting and planting equipment and shared his experiences.

The tour was great. I hope you will consider participating in our next tour. 🌱

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community WINDOW



*by Dick Leach, Director of
Community and Government
Relations*

Michigan is a wonderful place to live, work and eat. Yes, I said eat! The number of commodities produced here in Michigan is second only to California. We produce everything from asparagus to apples, sugar and flour to wine and everything in between. With free trade agreements and globalized marketing, how do we know if what we are buying or eating was produced in Michigan? Should we care? Does anyone care? Well I sure do! I want to support Michigan farmers, Michigan jobs, and Michigan's economy. I want to eat Michigan food as often as possible. That being said, I want to tell you about a promotional campaign that is taking place in the Michigan food community.

In 2003, the Michigan Department of Agriculture, in partnership with Michigan Integrated Food and Farming Systems, growers, commodity groups and organizations, and Michigan food processors, along with the help of a retail specialist, developed a pilot program known as "Select a Taste of Michigan."

The program was funded by a food secure futures grant and promotional fees collected from the commodity groups and processors. The Select a Taste of Michigan promotional campaign was carried out in 68 retail food outlets in the Grand Rapids area.

The program started in April with soy products, in May and June with asparagus, July with cherries and sugar, August with blueberries and peaches, September with organic foods, October with apples, November with potatoes, carrots and onions, and December again with apples and Pioneer Sugar. Each commodity was well advertised and had in-store booths and demonstrations. The whole focus was to encourage food outlets to recognize and market Michigan grown and processed products and to get consumers to look for Michigan products. Michigan products can be identified by a "Select Michigan" seal on their packaging. Check your Pioneer Sugar bag.

The Select a Taste of Michigan campaign was a great success in 2003 and more food stores are asking to take part this year. The program will be expanded in 2004 and Pioneer Sugar will be part of it. After all "Why buy food that is better traveled than you are?" Select Michigan. 🌱



Just when you thought you knew everything there was to know about growing sugarbeets, now you have to know the other side of the business, too.



It used to be that when harvest was over you could breathe a long sigh of relief. The sound of that last truck making its way back from the final haul was pure music. Not anymore. Not if you're part of the new majority — an owner in a sugar cooperative.

While the end of harvest does signal well-deserved accolades, there's more to tackle. Sugar marketing. Employee relations. Inter-campaign maintenance. Loan payments. Grower retains.

Reclaiming control.

Taking charge of your future is one very tough, very smart, incredibly brave decision. But everyone banding together for the greater good of all isn't that new of an idea. Neighbors working hand-in-hand to thrive in the new land

was the backbone of the American dream. That dream continues today — with you at the root of its success.

How do you make it in your new role?

The choice of growing sugarbeets has evolved into the responsibility of getting the sugar to its final destination. And it all begins with the right seed. You need varieties that are bred just for your field. The climate. The diseases. The insects. Hilleshög breeds varieties to withstand even the toughest conditions. So while you're learning everything else there is to know about sugarbeets, you can count on Hilleshög for everything there is to know about sugarbeet seed.

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Michigan Sugar Company and MASC Sugar Company held a press conference on February 5, 2004.

[Press conference and CAFTA](#)

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