MICHIGAN SUGAR COMPANY • SUMMER 2015

THE NEWSBEET

Getting all the Dirt on Dirt

Implementing a new incentive program will encourage growers to "leave the dirt in the field." Working together to reduce tare will benefit harvest, storage, our factories, and ultimately our shareholders.

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MICHIGAN SUGAR

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THE NEWSBEET

ROOT OF THE BUSINESS

by Mark Flegenheimer, President and Chief Executive Officer

CLEANING UP OUR ACT

With the crop flourishing after near ideal planting and early growing conditions, our attention now turns to harvest and processing what is likely to be another bountiful crop. In an ongoing effort for "continuous improvement" in operating efficiencies, the Cooperative is implementing a tare incentive program (see Page 24). We hope this new program will encourage growers to utilize the best practices available from both an operational and an equipment standpoint during harvest in order to "leave the dirt in the field."

Each year, Michigan Sugar Company must separate and dispose of nearly 150,000 tons of topsoil and rocks that are left with the beets after harvest and delivery. The soil and stones that enter the factory are very damaging to the processing equipment (see Page 26). In addition to damaging the factories, excess tare also negatively impacts beet storage and extraction rates.

Every ton of dirt that is washed off the beets must be handled in our factories' wastewater systems and eventually dredged from our ponds — this is a multi-million dollar annual task. About 40,000 tons of fieldstones that are removed must also be disposed of — sometimes at a local landfill. The rocks that get past our stonecatchers and make it up to the slicing stations are extremely costly and disruptive to our operations.

While it may be impossible to remove all of the topsoil and stones during harvest, certain growers consistently deliver beets with less tare. What are they doing to reduce the amount of dirt and stones with their loads — slower harvest speed, shallower digging depth, more aggressive stone "picking," newer equipment? We are focusing this issue of *The Newsbeet* on this important topic in an effort to get shareholders thinking about and implementing better practices. If all growers were able to lower their tare by 1%, the Co-op would have nearly 50,000 less tons of dirt wearing out machinery and impacting long-term beet storage.

Working together to reduce tare will benefit all shareholders. We believe the new tare incentive program will focus growers on "leaving the dirt in the field." I encourage you to take the time to explore ways you can reduce the amount of topsoil and stones you deliver along with your beets this fall.

Hopefully, the weather cooperates for the remainder of the growing season and the 2015 crop is another record breaker. Have a safe (and clean) harvest.

CROP UPDATE

by Paul Pfenninger, Vice President of Agriculture

We have had a very favorable and successful spring planting season. Soil conditions were a bit on the dry side, but adequate rainfall events occurred to help us get stand counts in excess of 200 beets per 100' of row.

Average rainfall from April 1 through May 5 is summarized below:

YEAR	MONTHLY RAINFALL
2010	2.52"
2011	4.96"
2012	2.77"
2013	7.38"
2014	4.08"
2015	2.01"
	AVERAGE RAINFALL = 4.34"/MONTH*

**Excludes 2015*

There were essentially two distinct planting windows this past spring. The first planting dates were between April 15 and April 20, when approximately 53% of our crop (86,000 acres) was planted. The second planting took place in late April between April 27 and May 3. By mid-May, approximately all of our 161,000 acres were planted.

Timely planting, followed by timely rainfall, has everyone thinking of a bumper crop for 2015. Replants are less than 1,000 acres and seedling diseases are at a minimum this year. Many of our fields, including 30" rows, were covering the rows before the summer solstice — the longest day of the year. With full canopy, adequate moisture and bright sunny days — how can we not be excited about this crop's potential?

The probability of a high yielding crop gets us thinking about an early start to harvest. The final decision is yet to be made, but unless we go into a severe drought later this summer, we should plan on an August startup date. There are 205 available days to slice beets if we start on August 20 and finish slice on March 12 — that sounds like a pretty good game plan!

Could this be the year when our average yield exceeds the 30 ton per acre mark? History would tell us that we are very close:

YEAR	T/A	SUGAR
2010	26.07	18.17
2011	24.07	18.16
2012	29.22	18.66
2013	26.11	18.34
2014	29.63	18.37
5-YEAR AVERAGE	**27.02**	**18.34**

We should be thinking 30 tons per acre and 19% grower sugar. We have an early planted crop with better than average stands. If we manage our Nitrogen and control Cercospora this summer, we might just succeed in rewriting the record books.

Let us hope our summer growing season and our fall harvest season are as good as our spring planting season.

Wishing everyone a safe and successful harvest season.

Timely planting, followed by timely rainfall, has everyone thinking of a bumper crop for 2015. Replants are less than 1,000 acres and seedling diseases are at a minimum this year.

HOW WASHINGTON AFFECTS YOU:

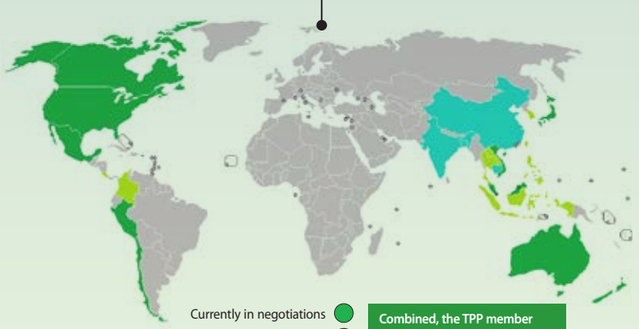
Agreements, Initiatives, Acts and Amendments

by Ray VanDriessche, Director of Community and Government Relations

Trade Agreements

Mexico Trade Cases Challenge to the Suspension Agreements. On March 19, the International Trade Commission (ITC) reached a unanimous 6-0 decision that the suspension agreements have eliminated injury to the U.S. industry. Following that decision, two cane refiners opposed to the suspension agreements (Imperial Sugar and AmCane) appealed the decision to the ITC claiming that the suspension agreements did not totally eliminate injury and that the anti-dumping/countervailing duty court cases should continue. As a result of the appeal, it will now be in the September/October timeframe before the Department of Commerce (DOC) and the ITC will make a final decision on the standing of the suspension agreements. Industry stakeholders and our Washington representatives continue to monitor the legal process closely and are optimistic about the final determination by the DOC and ITC. In the interim, the terms of the suspension agreement stay in effect.

Trans Pacific Partnership (TPP) Passage of the TPP trade agreement is one of the Administration's top priorities before President Obama leaves office. Critical to moving the TPP negotiations forward was the acceptance and passage of Trade Promotion Authority (TPA) and the Trade Adjustment Act (TAA). After a lengthy debate in both the House and Senate, and several attempts to secure enough bipartisan votes, the Administration, supported by the Republican-led House, was given the trade promotion authority needed to move the trade negotiations forward. TPP negotiations are expected to resume mid-July at a ministerial meeting with chief negotiators on hand.



Update on Biotech Labeling Initiatives

Pompeo-Butterfield GMO Labeling Bill (HR 1599) Energy and Commerce Chairman Upton who has jurisdiction over HR 1599 said that he plans to move the labeling bill through subcommittee and the full committee by the August recess. The legislation will create a federal standard for GMO labeling that would define and regulate labeling of GMO foods and stop individual states from passing labeling laws not identical to the federal standards, if passed.

USDA Non-GMO Label The USDA has announced that they will be developing a non-GMO label modeled after organic labels now in use. Private sector non-GMO labels seen on grocerystore shelves currently are leading to misinterpretation and confusion. This action by USDA would fulfill non-GMO labeling language requirements being proposed in the Pompeo-Butterfield Bill. The Ag Committees will have jurisdiction over the final non-GMO labeling criteria language.

GMO Spokeswomen Project In an effort to educate the public, and especially young mothers, about the safety and science of GMO-derived foods, the sugarbeet industry has initiated a GMO Spokeswomen Project. Laura Rutherford of North Dakota was designated as the first spokeswoman for the industry in 2014 and has already presented at a number of venues in defense of GMO foods. The project has since blossomed in to a group of 15 spokeswomen throughout the U.S. sugarbeet industry who will be trained to publicly present science-based information connected with the evolution and safety of GMO derived foods. One of the main objectives of this effort is to refute the radical misinformation that is so rampant on social media. Two very talented young women from the Michigan sugar industry have stepped up to serve as an integral part of the GMO Spokeswomen Project. They are Rita Herford of Harbor Beach and Allyson Maxwell of Hope. Hats off to Rita and Allyson for their commitment to promoting safe and healthy foods to consumers. All 15 of the spokeswomen will be attending a very intensive two-day training session this fall.

GMO Crop Production Ban in Jackson County, Oregon In May of 2014, an ordinance was passed in Jackson County, Oregon, banning the production of GMO crops starting in June of 2015. The following December, two growers of GMO alfalfa located in the area sued the county to have the ban blocked stating that the ban would cause them undue financial hardship. Unfortunately, a federal judge from Southern Oregon denied the request and ruled that Oregon's Right to Farm Act does not take precedence over the County's ordinance. The ruling, however, did not block the two GMO alfalfa producers' ability to sue Jackson County for undue loss of income and hardship. The litigation is currently in process. A similar ballot initiative to ban GMO production in Benton County, Oregon, was defeated on May 19 by a 73% margin. The defeat of the Benton County initiative was critically important to our industry because of sugarbeet seed production in the region.

Other Acts and Amendments

Clean Water Act – WOTUS. The EPA released the final rule of the Clean Water Act the last week of May after years of controversy. The controversy was due to what many believe is overreaching authority and jurisdiction by the EPA to control wetlands, waterways, standing water in fields, and drainage systems that are a natural part of farming operations. The EPA had indicated to Congress and farm organizations on numereous occasions that they would make adjustments in the final rule that would address their concerns. A close analysis of the final rule showed that the EPA had in fact not substantively changed the language that would extend their authority to regulate beyond "navigable waters." As a result, Congress has indicated that they will use several options at their disposal to block the final rule and a number of states have threatened lawsuits against the EPA if the final version is implemented.

Anti-Sugar Amendments. A number of anti-sugar amendments have been offered both in the House and Senate by sugar industry opponents already in 2015. To date, these amendments have not gained enough support by co-sponsors to move forward in either the House or the Senate. The lack of co-sponsors to the anti-sugar amendments is directly attributed to the industry's ability to use PAC funds to attend functions where sugar industry representatives and growers can meet with legislators. These one-on-one meetings create an opportunity to educate legislators about the necessity and benefits of sugar policy in the Farm Bill and why oversight in trade negotiations is critical in avoiding an oversupplied market.

It is easy to see where PAC dollars are put to good use. We thank you for your contributions.

Ray VanDriessche, Michigan Sugar Company's Director of Community and Government Relations, is also a third-generation farmer in mid-Michigan. He travels to both Lansing and Washington D.C. often to follow and advise on political activity that will affect agriculture in Michigan.

PLANNING FOR YOUR FUTURE:

Are Your Co-op Shares Titled Appropriately?

by Todd W. Hoppe

Would you buy sugarbeet seed, but skip planting? Would you plant a sugarbeet field, but skip harvest? Not on purpose — you finish what you start.

Unfortunately, in my work with farmers and their cooperatives, I have seen many situations in which farmers unintentionally do this with their estate plans.

Everyone needs an estate plan, especially farmers with complex and valuable assets. Most farmers start their estate plans in earnest. They hire good lawyers to prepare estate planning documents, which often include wills and revocable living trusts. This is the first step — like buying seed.

Benefits of a Revocable Trust

If properly implemented, an estate plan that includes a revocable living trust should provide a mechanism to manage the farmer's assets if he or she becomes incapacitated, and should eliminate the need for probate. Probate is simply a court-supervised transfer of the farmer's assets to his or her beneficiaries, following the farmer's death. Many farmers wish to avoid probate to reduce costs and eliminate public disclosure of assets and the way they are distributed.

Funding a Trust

To properly implement a trust-based estate plan and avoid probate, all of the farmer's assets must be either transferred to the revocable trust or titled in a manner that automatically transfers the asset without probate. Common examples of non-probate transfers include joint tenancy with survivorship rights, beneficiary designations, and transfer-on-death ("TOD") registration. The process of transferring assets to a trust is commonly referred to as "funding" the trust.

Assets titled in the trust will be distributed according to the terms of the trust. Assets titled in beneficiary, survivorship, or TOD form will be transferred based upon how the assets are titled. All other assets — those the farmer owns in his or her individual name at the time of his or her death — must be transferred through probate. As a result, if the farmer owns even one material asset individually upon death, probate will be required.

Common Problems in Trust Funding

Transferring assets to a trust can be a lot of work, especially when a farmer acquires many parcels over several decades, inherits other parcels, and divides and sells parcels (think of the farmhouse and two acres you sold to a neighbor). Most lawyers who regularly work with farmers do a good job of identifying and transferring real estate and most other farm assets to trusts they help create; however, problems commonly arise in a few situations.

For example, a farmer may not disclose a piece of property when setting up a trust (e.g., because of incomplete title records), which can lead to the property not being transferred to the trust initially. More commonly, a farmer may acquire additional land after the trust is formed, but forget to have the land titled in his or her trust. In each case, if real estate is held in the farmer's name individually upon death, a probate estate will be required.

I am privileged to be able to work with Michigan Sugar Company to address unique issues relating to stockholders' and growers' trusts and estates. There are many creative ways in which Michigan Sugar Company stockholders title their stock, request temporary share transfers, and earn patronage, all of which can lead to unique issues upon death; however, in my experience, a few situations are most likely to cause problems with funding a shareholder's trust.

First, a Michigan Sugar Company shareholder may hold stock in his or her name individually, even though he or she has a revocable trust. This may happen when a farmer forgets to transfer shares to his or her trust, or attempts to transfer shares to his or her trust, but fails to request approval of the proposed transfer by Michigan Sugar Company. Michigan Sugar Company's Bylaws clearly provide that stock transfers are not effective unless and until approved by the Board of Directors. Unless the Board approves the transfer before the shareholder's death, the shares are included in the farmer's probate estate. The surviving family members may be required to open a probate estate to request a transfer. The same situation can arise with other assets, such as bank accounts, brokerage accounts, and stock purchased for investment purposes.

Second, a Michigan Sugar Company shareholder may own other equity (e.g., patronage equities and unit retains) individually. This happens automatically when a farmer does business as a sole proprietor — in other words, in his or her own name, rather than through a business entity like a corporation or limited liability company. These equities are issued to each grower who delivers sugarbeets to Michigan Sugar Company, as identified on the grower agreement. For sole proprietors, equities are issued to the farmer individually and, therefore, are subject to probate upon death. A farmer who wants to avoid probate can do so by conducting business through a corporation, a limited liability company, or through the farmer's revocable trust. As with stock, surviving family members may need to open a probate estate to request a transfer of a deceased farmer's equities.

What Should I Do Next?

You should review your assets and your estate plan to make sure your plan works as intended. If you have a revocable trust, make sure you discuss all of your assets with your estate planning attorney, and that all assets are properly titled. If you determine it is necessary to transfer stock or make other changes related to your ownership in Michigan Sugar Company, you may contact Shareholder Relations for appropriate forms and procedures.

Todd Hoppe is an attorney and the practice group leader of Foster Swift's Business and Corporate Practice Group. He works extensively with businesses and individuals in the agriculture, insurance, service, manufacturing and construction industries, especially farmers and agricultural cooperatives. Business buyers and sellers retain Todd for counsel on sophisticated mergers, asset sales and stock sales. Todd represents agricultural marketing cooperatives and supply cooperatives, consumer cooperatives, and purchasing groups organized as cooperatives. His work includes forming cooperatives, serving as general counsel, advising clients on Capper-Volstead Act anti-trust compliance and other laws unique to cooperatives, and representing cooperatives in specific matters, such as business transactions and both private and state-registered securities offerings. In addition, Todd works with farms and other family businesses to craft and implement estate and succession plans that accomplish their business, tax, and family goals.

QUICK CHECKLIST:

Review Your Estate Plan

- ☐ Work with your estate planning lawyer to develop a comprehensive estate plan.
- ☐ Consider the structure of your business. Should you use corporations or limited liability companies? How should your ownership interests in those entities be titled?
- ☐ Identify all of your assets, including real estate. Don't forget about Cooperative stock and equities — they can be valuable assets.
- ☐ Make sure you know exactly how all assets are titled, and share documentation with your lawyer.
- ☐ If your plan includes a revocable trust, make sure all appropriate assets are transferred to the trust.
- ☐ When you buy assets in the future, such as additional land or stock, make sure it is properly titled.

TANGIBLE PROPERTY REGULATIONS: WHAT YOU NEED TO KNOW NOW

by James Gerding, CPA

Have you heard about the IRS's issuance of tangible property regulations, also known as "repair regulations"? These regulations are important to consider if you have acquired, produced or improved tangible property on your farm or for your farming enterprise … and overlooking them might mean you are leaving money on the table.

To help you get up to speed, here are five things you need to know.

① **If you can carry it and you use it for your business, it might apply**
It helps to know what applies as tangible property. One way to think about it: if you can carry it, it might apply. So if your farming operation has an office, items like work computers, desks, and chairs fall into this category.

② **Even if you cannot carry it, but you use it for business, it might apply**
Some equipment far too large to carry also qualifies, such as machinery, leased equipment, and even signs. If you have a large operation, storage facilities like silos and barns are likely candidates. Noticing a pattern? If the property in question is necessary for you to conduct business, there is a good chance it qualifies.

③ **If it improved your business property, it might qualify**
Tangible property also refers to improvements made to real estate that you own. For example, irrigation and tiling are considered to be land improvements.

④ **This is largely considered good tax news**
It is rare that "good" and "tax" are used in the same sentence, but the new regulations help clear up many issues that caused taxpayers frustration in the past. The new regulations contain several new elections (ways to deduct or capitalize your expenditures) and are considered "taxpayer-friendly." That is code for, "You might realize notable financial benefit as a result of the new regulations."

⑤ **You are going to want help on this one**
We are way beyond 1040EZ here. While some view these changes as friendly, the myriad, and sometimes byzantine, considerations you will have to make in leveraging the final regulations can seem far less than friendly. Fortunately, just as you do not need to know how the internal combustion engine works in order to know when to take your car into the shop, you do not need to understand or memorize tax code to know that you should meet with your tax advisor about the repair regulations as soon as possible so you both can be prepared to take advantage of any possible beneficial deductions or capitalizations.

3 FARMING EXAMPLES: How the new tangible property repair regulations may affect you

There are literally thousands of possible variations on such conversations, but hopefully these scenarios will give you a better idea of how and why the final repair regulations need to be on your radar. Be sure to reach out to your tax advisor as soon as possible so you can both be prepared to take advantage of any possible beneficial deductions or capitalizations.

I am a farmer producing cash crops for sale. What aspects of the new repair regulations apply to me?

Since you likely purchase small equipment and tools to be used on the farm, the new repair regulations have a new de minimis rule you should adopt. The thinking has also changed on accounting for substantial repairs. Let's say you have extensive irrigation equipment — eight spans on a pivot — and one of the spans collapses, which costs $15,000 to replace. Under these new rules, replacing that span might qualify as a repair expense; or, if you replace all of the sprinklers on an irrigation pivot every few years, the replacement sprinkler package might qualify as a repair expense as well.

What about the repair to my barn roof that I made in 2013? I capitalized it. Do the new repair regulations allow me to expense it now as a repair?

Possibly. You will definitely want to review exactly what was done with your tax advisor and determine if you qualify for a "catch-up" expense deduction on your 2014 income tax return.

I bought a new tractor with a 225 hp rating and paid an additional $10,000 to turbo-charge the engine, increasing the horsepower to 250. Does this additional cost qualify as a repair expense under the new guidelines?

Probably not. Because this expenditure increases the power capacity of the tractor, it is a betterment that may have to be capitalized.

James Gerding, CPA is a tax principal with Rehmann and has been practicing public accounting since 1974. He works closely with clients in the agribusiness industry and can be contacted at james.gerding@rehmann.com.

Harvest Strategies to Minimize Sugarbeet Tare

In 2016, Michigan Sugar Company will implement a new program for growers giving financial incentives and deductions related to tare amounts. This policy is new to the Michigan Sugar grower; however, tare incentive programs have been common in other sugarbeet growing areas for several years. This policy will be a positive for the Co-op as it will encourage all growers to take steps to reduce tare. A small reduction in tare by even a half percentage point can mean 25,000 tons less soil reaching the factories.

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

Why is this important? Tare reduction can have many positive impacts that will make the Co-op more profitable, efficient and environmentally friendly. Transportation costs will be reduced from hauling less tare to and from the factory. Sugarbeet piler efficiency will be improved, along with reducing the strain that contributes to piler breakdown. More importantly, reducing tare improves long-term pile storage.

Delivering clean beets to the factory will reduce cleaning cost and reduce wear on slicing knives. Water and energy cost can be reduced. Throughput at the factory will be increased in terms of hundredweight of sugar going to the silo. Clean high quality beets always improve factory efficiency and lessen the length of campaigns. Environmentally, less soil goes to the "ponds," which will reduce pond cleaning and disposal.

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***Steve Poindexter** is the Senior Sugarbeet Educator with Sugarbeet Advancement, MSU Extension. Steve has been the Director of Sugarbeet Advancement for 16 years.*

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What have other companies seen? American Crystal Sugar Company has a tare program in place and they believe it is beneficial. Their five-year average for percentage of growers penalized versus incentivized is 37% to 63%. They believe the program has led to growers updating their harvesters to be "cleaner" machines, especially in their heavier soils. Growers have added chaincarts to improve cleaning capabilities. Most importantly, growers have delayed their start of harvesting fields that are wet to keep tare at a minimum. They noted that the program creates a competitive advantage for growers who work hard to keep tare low, and that their tare ranking has become a metric that growers have a lot of interest in.

Where is tare removed now? Reducing the tare before it gets into the factory is a multipronged approach. The first and most desirable is to leave as much tare as possible in the field when lifting, loading and/or "Mausing" beets.

At the piling grounds, the piler's primary function is building beet piles and secondarily as a means of removing tare. These first two stages are preferred because of convenience and that it leaves or returns soil to the field at the lowest cost to the Co-op. Removing tare any time before piling will also improve long-term storability of beets.

A third stage is removing tare after storage and prior to slicing. Dry screening and washing is more costly to implement, time consuming, and an environmental concern to the Co-op.

What can we do? Everyone recognizes that the amount of soil tare is highly dependent on moisture conditions and soil types. Drier conditions and light textured soils generally yield less tare when compared to wet clay soils. Resisting the urge to harvest in wet conditions is difficult, especially when faced with large workloads in a short harvest window. This is compounded by the rapid adoption of beet carts and self-propelled harvesters that allow harvest under more adverse conditions. Wet soil will be more sticky/cloddy and will increase tare. Consult with equipment suppliers on how to best adjust harvesters for the least amount of tare. Sugarbeet Advancement does have a small supply of Sugarbeet Harvester Adjustment Slide Rules available upon request. Growers may also want to consider the benefits of utilizing the high capacity beet chaincarts that help lessen tare along with field compaction. At least five manufacturers offer these types of carts that range from 20-46 ton capacity. Cleaning capabilities have not been evaluated between carts. A "BIG BEET CART" Field Day Demonstration is being planned by Sugarbeet Advancement for mid-September 2015.

In the early 90s, growers were harvesting, on average, a 15-20 ton beet crop. Today, we are averaging close to 30 tons per acre. When harvesting big crops, harvester speed should be adjusted downward (3-4 mph). This will allow for better cleaning and less "carrying" of soil over grab rolls that are packed full of beets. No one likes to harvest slower, but we also do not like piler downtime and storage concerns like we had in 2014. Grab roll speed may also need to be increased. Worn out wraps and tightly spaced grab rolls will also not allow for good cleaning. Digger wheels set too deep will also increase tare. A three-inch digging depth is a good place to start; however, be cautious that digging too shallow can lower tonnage from broken off tails left in the ground. Remember, pinch points on lifter wheels should be about 1¾ inches as a starting point. As digger wheels wear, pinch points will widen and lift extra soil.

What about research? A non-published study conducted in 2009 by Sugarbeet Advancement at Richmond Brothers Farm located in Pigeon, Michigan, produced some interesting trends with regard to reducing/increasing tare. In the test field, harvest (soil) conditions were considered good. Using an Artsway harvester, two PTO speeds were compared, with the faster speed reducing tare by 0.8 percentage points; however, be cautious that too fast of speed can also cause excess chipping of beets. When comparing two digging depths, the deeper depth increased tare by 0.9 percentage points; however, deep digging also produced a higher yield from harvesting longer tails. When comparing harvest speeds of 3, 4 and 5 mph, very little difference was seen comparing tare. Overall, tare averaged a very acceptable 2.2%. Under less ideal soil conditions, we would expect slower speed to have less tare.

In another test at the Richmond Brothers Farm, a topping test was conducted. A comparison of excellent topping to poor (some petiole left) was evaluated. In the current Michigan Sugar Company Tare Program, petioles are not considered as tare; however, beet quality was effected by slightly reducing clear juice purity and percent sugar. This resulted in 4 pounds less recoverable sugar per ton (RWST). This was equivalent to 58 cents per ton ($17.40/acre on 30 ton beets). Petioles and foliage in the beet piles will also reduce beet storage.

In summary, leaving as much tare as possible in the field is the least costly, most efficient and environmentally best way to deal with tare. Field conditions (wetness) and soil texture have the largest impact on tare; therefore, field order of harvest and using early delivery for problematic fields can have some of the biggest impact on tares. Tare amounts can be reduced through harvester adjustments, speeds, and maintenance, which will pay both the grower and the Co-op. Additional, but more costly, improvements can be made by updating harvesters and using sugarbeet chaincarts.

Tare reduction is not only the responsibility of growers, but in the future, other innovative approaches to remove tare should be developed and expanded by Michigan Sugar Company at the piling grounds or before beets enter the factory. Beginning in 2016, producers will be financially rewarded, or penalized, based on the parameters of the Michigan Sugar Company Tare Incentive Program. Efficient processing of sugarbeets is greatly improved when a clean, high quality crop is harvested and stored properly prior to factory processing.

RIGHT: *Minimizing tare will include adjustments at multiple points on the harvester.*

The Dirt on Dirt:

Figure 1. Uniformly spaced sugarbeets allow for excellent defoliation.

How Growers Can Produce Effective Tare Reduction

Tare increases hauling costs, causes pile storage losses, reduces sugarbeet quality, factory efficiency, and grower payments, and fills our settling ponds with soil. Lower levels of tare benefit growers, factories and the Cooperative.

by Jim Stewart, Director of Research

The sugarbeet crop was planted a little late this year due to a cold March and frequent April rains; however, stands are favorable in most fields and continued rains and warm weather have set us up for another big crop. New seed treatments have provided protection from seedling diseases and Quadris applications are helping to control Rhizoctonia root rot. Cercospora leafspot will be our next big challenge. Just because leafspot pressure has been low in recent years, does not mean that we will not have a problem with Cercospora this year.

Early harvest may begin as early as August 20 and growers should be preparing their equipment for another harvest. Michigan Sugar Company will be implementing a new Tare Reduction Program in 2016 which will benefit growers who deliver clean loads of sugarbeets and penalize those with dirty loads. Tare increases hauling costs (trucking more soil), causes pile storage losses, reduces sugarbeet quality, factory efficiency, and grower payments, and fills our settling ponds with soil. Lower levels of tare benefit growers, factories and the Cooperative.

Figure 2. Defoliation problems caused by uneven sugarbeet stands.

One of the best and most profitable ways for growers to reduce tare is by establishing and maintaining a **uniform sugarbeet stand.** Recent advances in seed priming and sugarbeet seed treatments have enabled growers to establish more uniform sugarbeet populations. When fields are properly worked, populations of around 200 evenly-spaced beets per 100 feet can be achieved (**Figure 1**); however, when the seedbed is uneven, with alternating sections of moist and dry soil, emergence will also be uneven, with some plants emerging late, causing gaps and small beets interspersed between larger beets (**Figure 2**). Large beets on the end of gaps are likely to be damaged or knocked out of the ground by the defoliator and small beets growing between larger beets are almost impossible to defoliate.

Controlling sugarbeet root diseases is necessary for producing a high yielding, high quality crop. Healthy fields are also much easier to defoliate and harvest. Root rots (Rhizoctonia, Aphanomyces, Fusarium, etc.) kill some sugarbeets outright and leave other beets with weakened root systems. Surviving beets can grow very large due to poor stands and are susceptible to being knocked out of the ground by the defoliator, as are beets with weakened root systems.

Cercospora leafspot lowers yields and quality by prematurely defoliating the crop. As the canopy grows back, the crown tissue grows larger and the beets stick up higher, making them a target for the defoliator. Petioles of dead leaves also cling to the sugar-beet crown and are hard to remove during defoliation.

Proper defoliation techniques are essential to harvesting a clean sugarbeet crop. The obvious purpose of defoliating beets is to remove the leaves from the beets without causing excessive damage to the sugarbeet root. The defoliator should also sweep the leaves and trash to the middle of the rows so that the row finder works properly and so that trash will not end up in the harvester bin.

A successful defoliation operation depends upon several factors including a uniform, healthy sugarbeet stand, a properly maintained topper, and a skilled operator who can make adjustments as conditions and varieties change.

The defoliator should be adjusted when moving from field to field, and possibly when changing varieties and should operate between 3.5 and 4 mph. Research studies have shown that sugarbeet quality decreases by as much as 15% at topper speeds of 5 to 6 mph. The amount of tare also increases proportionally as the topper speed increases.

Large green canopies at harvest time, caused by too much nitrogen, take more power to defoliate and the excess foliage prevents the soil from drying, causing tire slippage. Flails and all moving parts should be inspected and repaired or replaced as needed.

Sugarbeet harvest is a busy and stressful time; however, harvesting speed should be maintained between 3-4.5 mph, depending upon field conditions. Research trials have

continued

Figure 3. Ropa Tiger self-propelled harvester with defoliator and scalper on front of machine.

shown that yields decreased by 10%, quality decreased by 16 pounds of sugar per ton and tare increased by 5% when harvesting speed was increased to 5-6 mph.

Soil moisture levels and conditions have a huge impact on digging beets. It is difficult to maintain digger depth in dry conditions, which causes root tails to break off and more clods end up in the bin. In wet conditions, tractor and harvester tires slip and sink and it is difficult to keep on the row, slicing and missing beets. Tractor tires push the adjacent row to the side during wet conditions, causing root slicing on the next pass. Mud sticking to beets also increases tare significantly.

New technologies such as RTK auto-steer, digger wheel depth control (Amity Technology), **self-propelled harvesters (Figure 3)** and the **Maus** loading/cleaning system **(Figure 4)** are improving our harvesting systems. Self-propelled harvesters have increased in popularity in Michigan in recent years because they require fewer tractors, workers, trucks and carts. Self-propelled harvesters defoliate, scalp and harvest beets in a single operation and often pile sugarbeets in clamps on the end of fields. When operated and adjusted properly, self-propelled harvesters lower tare levels, and because of the scalping operation, sugarbeet quality is higher. Care needs to be taken not to scalp deep or yield loss and root infections can occur. Self-propelled harvesters can harvest in

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Figure 4. Euro Maus cleaning and loading a clamp of sugarbeets.

Table 1. **Influence of Scalping and Defoliation Treatments on Sugarbeet Quality, Storability and Grower Income. Michigan Sugar Company • 2010**

Defoliation or Scalp Treatment	Grower Income $/Acre	After Storage (105 days) RWST	After Storage (105 days) % Shrink[1]	After Storage (105 days) % Root Rot[2]	10/22/2010 After Defoliation or Scalp Treatment Tons/Acre[3]	10/22/2010 After Defoliation or Scalp Treatment % Wt. Loss[4]
Scalp 1-2" Dia.	$1,446	279	13.1	9.4	28.5	5.1
Good Defoliation	$1,405	270	12.9	7.5	28.6	4.6
Poor Defoliation	$1,306	240	14.2	9.4	29.9	0.2
Fair Defoliation	$1,266	243	13.2	7.5	29.0	3.4
Mean	$1,356.0	258.2	13.34	8.44	29.0	3.32
LSD: 5%	$157.0	26.9	ns	ns	0.3	1.0
CV	7.24	6.51	13.7	37.77	0.7	18.89

[1] Weight loss during storage

[2] Root rot percentage determined when beets sawed in half

[3] Weight following scalping or defoliation treatment (assume 30 T/A before defoliation or scalping)

[4] Percent weight loss due to scalping or defoliation treatment

Figure 5.
Properly defoliated beets
(RWST after storage: 270 lbs)

Figure 6.
Poorly defoliated beets
(RWST after storage: 240 lbs)

Figure 7.
The second beet from left was scalped properly (1-2" diameter slice) and had 279 lbs RWST after storage.

wetter conditions than traditional harvesters; however, harvesting in wet conditions will increase tare.

Research conducted at Michigan Sugar Company illustrates the effect of **scalping sugarbeets** compared to traditional defoliation **(Table 1, Figures 5, 6, and 7).** When beets were scalped with a 1-2" diameter slice, sugarbeet quality and grower income improved. Proper scalping decreased yields slightly, but did not increase the level of root rot during storage. Deep scalping resulted in more root rot during storage.

Many self-propelled harvesting operations build clamps on the end of fields and utilize the Maus to load trucks. The Maus provides an extra cleaning step while loading trucks and reduces tare when operated at an appropriate speed.

Recent advances in variety improvement, seed priming, seed treatments for seedling disease control, Rhizoctonia control and more utilization of cover crops have helped to improve stand establishment in Michigan. Uniform stands make defoliation and harvesting operations much more productive.

Figure 8. **Smooth root genetics (top photo, 1.4% tare) compared to a traditional sugarbeet variety (bottom photo, 4% tare).**

USDA scientists, including **Dr. Mitch McGrath** at Michigan State University, have been developing **smooth root** sugarbeet genetics for more than a decade. The germplasm for this trait is available to seed companies and if integrated into commercial varieties would dramatically reduce tare **(Figure 8).** Seed companies have been slow to adopt this trait because of the time and expense required, and they have no guarantees that the smooth root trait would be profitable to them. Plant breeding companies focus their variety improvement resources on traits that are either required by the Cooperative or traits that growers are demanding (i.e., Rhizoctonia, Cercospora and nematode tolerance). **Tare reduction programs** and requests from growers to plant lower tare type varieties may provide the incentives needed for the development of smooth root varieties.

***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 with the company for 17 years.*

Take a TIP from Us: Tare Incentive Program Approved

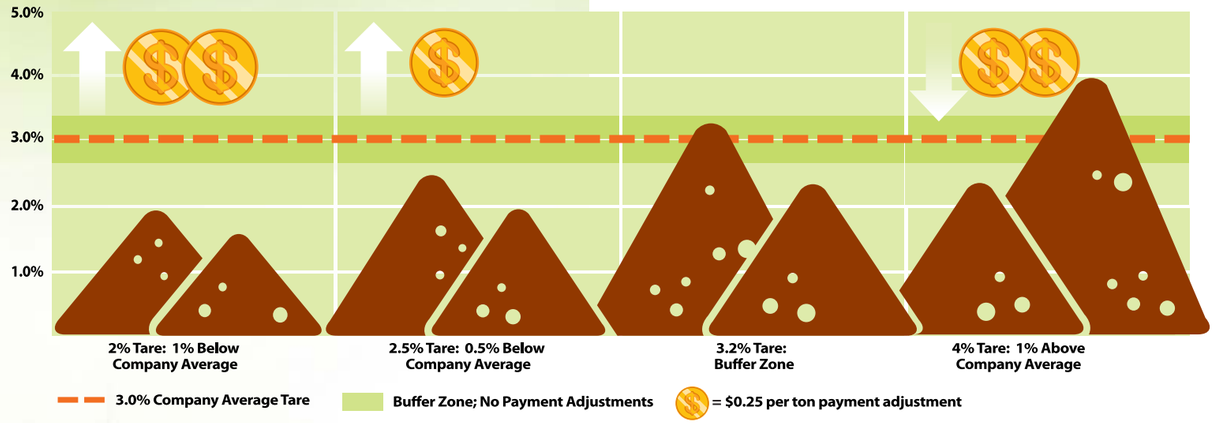
by Paul Pfenninger, Vice President of Agriculture

The Grower Relations Committee has been developing a tare incentive program for over a year. After the 2014 sugarbeet crop was harvested, and with all the late rain, we experienced some very trying harvest conditions. The difficult harvest conditions led to discussions about pile storage conditions and the concern with all the mud in the piles. The topic eventually came back to tare — would growers have done things differently or can growers be influenced to do a better job of cleaning beets IF we had a tare incentive? This led to a meeting specifically to discuss tare incentives and resulted in our newly implemented 2016 Tare Incentive Program.

The Grower Relations Committee made a recommendation to the Board of Directors, and with Board approval, we now have a program designed to reward growers who manage to keep tare at a minimum and penalize growers who have elevated tares.

4-YEAR TARE AVERAGE, COMPANY WIDE

YEAR	AVERAGE TARE
2014	3.60%
2013	2.90%
2012	3.00%
2011	3.40%
4-Year Average	3.22%



- The program is only implemented during regular delivery (when beets are put in long-term storage piles) and does not include early delivery beets.
- It is a Companywide program that is consistent and similar to the Companywide sugar quality program.
- No minimum tare amount. Previously, a minimum of 2% was in place. A maximum of 20% (most likely for stones) remains in place.
- A buffer range of +/- 0.25% where no incentive will be earned. For instance, if the Company average tare for regular delivery is 3.00%, then the tare program for incentives starts at 2.75% or lower, and deductions begin at 3.25% or higher.
- The incentive will be at $0.50 per ton for each full point up or down in tare and it will be prorated.
- All the Maus operations will have a handicap equal to the rolling five-year average difference between conventional and Maus beets (currently about 0.50%) because of the advantages of historically lower tare on beets that are run through a Maus.
- TIP will be implemented beginning with the 2016 crop year.
  - We will run tare numbers for growers to compare the tare payment from Crop Years 2013 and 2014. We will also run the new program alongside the old program for the harvest of the 2015 crop. Growers will have one year to experiment with harvest practices that will impact tare.

The major reason to implement this program is to have cleaner beets delivered to the Cooperative. There is a tremendous benefit to all shareholders if we can reduce the amount of excess soil that is brought in with the beets. All excess soil must be handled somewhere in our process — whether it be in the prescreening of beets or in our ponds. It is always better to leave it in the field.

The two biggest and most obvious culprits to higher than average tare are harvester speed and the depth of the digger wheels. We want to harvest all of the tips of the beets, but there is a fine line where excess tare outweighs the benefits of harvesting every last tip on every beet.

Tare incentives are not new to the sugarbeet industry, but new to Michigan Sugar Company. We believe we can do a better job, overall, with the harvesting of our beet crop. If we harvest 5,000,000 tons of beets and we reduce our tare by just .25%, we keep 12,500 tons of excess soil from entering our facilities.

We have always had an interest in Company tons per acre, grower sugar, and Companywide recoverable white sugar per ton (RWST). Now, with the new Tare Incentive Program, we can add Companywide tare. It is an incentive program and everyone should be rewarded for a job well done!

Growers should begin thinking of ways to reduce tare with the 2015 crop year. It should be everyone's goal to reduce overall average tare to be 3.00% or lower! ***Let's make it work!***

Paul Pfenninger, Vice President of Agriculture,
has been with Michigan Sugar Company for 32 years.

Wear and "Tare" in the Factory

By William Gough, Caro Factory Manager

Sugarbeet tare (soil, trash, stone, etc.) that is introduced into the factory through the flume system with the beets has a significant impact on factory operations, maintenance, and operating costs. It impacts everything from our ability to flume beets into the factory to our ability to maximize sugar pack. It impacts the amount of wear and erosion on pipes and pump parts, and affects the process to the point of increasing sugar loss to molasses.

LEFT *Just some of the stones separated out of the sugarbeets at Caro during the 2014-15 season. Our calculations indicate we get 0.50 – 1.00% stones from the tonnage we slice for any given season. Croswell, Sebewaing and Bay City are very much the same.*

Fluming

When beets with excessive weeds, tops, soil (muddy or frozen clods), and stones are loaded into the wet hopper, they tend to stick and hang up. They do not float very well and clog the stone removal equipment. This causes poor stone and gravel removal and beets sometimes go out with the stones. When there are large or excessive amounts of mud, it plugs the flume leading to the beet pump and not only results in a stoppage of the slice, it also causes undue stress on the mechanical and electrical systems that are responsible for moving the beets to the beet washer.

Washing

The beet washer is a very important step in factory operations. This is our last opportunity to remove any soil or stones that may have made it into the factory. The effects of excessive tare at this point are similar to the effects in the fluming operation, plus it can and does overload the washer and its ability to remove any non-beet material going to the slicers.

Slicing

At the slicers, stones are an obvious problem. If stones make it to this point, one stone can ruin many knives and render them too damaged to be sharpened and they have to be discarded. At around $8 per knife, we reuse knives as much as possible and knives can be sharpened many times, under normal conditions. In just a few seconds, one stone can damage as many as 64 knives to the point they have to be discarded.

Soil and gravel, tiny stones ¼ inch or less, will pass between the slicer knives, but dull the cutting edges as they do so. This introduces soil and grit into what will be the sugar juice that goes on to process and causes extra wear on pipes, pumps, cossette mixer and diffuser. Any soil, grit and small gravel that passes through with the wet pulp causes excessive wear to pulp press components and extra man-hours and materials are required to repair them. Meeting proper clearances and tolerances are necessary for presses to dewater pulp properly. If presses do not function properly, excessive pulp moisture requires larger amounts of energy for drying and, if being sold for feed as pressed pulp, may cause spoilage in storage by affecting ensiling properties. The grit and small gravel that flows through the dryer with the dried pulp causes excessive wear on scrolls, conveying equipment and, if being pelletized, pellet dies. Ultimately, it ends up in the final pulp product and can result in complaints and rejections at the customer level.

Excessive trash, such as beet leaves, weed stalks and tree limbs or roots, do not cut easily and tend to wrap around the edges of the knives leading to premature dulling and additional knife changes. Factory throughput is greatly reduced when knife changes become too frequent.

Why is it important to maintain sharp knives? The purpose of slicing is to expose the root tissue so efficient diffusion of sucrose can occur from the sugarbeet root tissue to the liquid (water) without excessively damaging the cellular structure so that non-sugar components stay in the cells and exit with the pulp. These other components are commonly referred to as impurities and, when present in the juice, affect our ability to extract sugar. If root tissue is damaged because of dull knives, more impurities means higher sugar losses. Another problem that can stem from dull knives is reduced pressing efficiency. If the pulp does not dewater effectively, the flighting on the press screw cannot draw the pulp through effectively. This results in high moisture pressed pulp with the associated problems mentioned above. So, proper knife settings and sharpness is vital to efficient factory operations.

Wash Water

What happens to the water that is carrying the soil and organic matter from the washing processes? The factory pond system is designed to settle out and separate the soil that is washed off the beets. When soil tare increases, the additional solids loading requires more pond cleaning and/or chemical treatments to maintain conditions. Normally, the water used to wash the beets goes out to the ponds where the soil and other solids settle out before the water is pumped back to the factory for washing more beets. During periods when tare becomes excessive, the coarser soil particles can be removed by additional dredging at the point where the water enters the pond system; however, the fine clay-like particles do not settle as readily and often end up going around in the system and can accumulate to the point that they cause pumping problems and premature wear to system components. These fine solids may settle out at other points in the system and cause restrictions to flow and process slowdowns.

Another issue associated with excessive tare is accelerated beet degradation in the storage pile. This can cause more organic material (beet tissue) to be carried out to the ponds. This also results in more solids accumulation, more bioactivity and hence more chemical and mechanical treatment to treat the water, poor settling of the finer particles, reduced washing capacity and more wear on pumps and pipes.

Processing

Following through the process, any soil that enters the juice stream adds to the impurity load in the process juice. The solid soil particles are eventually eliminated during filtration, but dissolved components, such as sodium, nitrogenous compounds, etc., all add to the fraction that will end up as molasses. The more soil and plant material that enters the system the more impurities flow through to the molasses, which takes sugar with them to the molasses (higher sugar loss).

Factory managers estimated the additional costs incurred this past season due to the elevated amount of dirt tare encountered. All factories utilized some sort of extra re-screening equipment to reduce the load on the factory and pond systems (cost not included in this article). Each factory manager's estimate varied quite a lot, depending upon how they are required to handle some of the waste (soil, stones, trash, etc.) and the type and age of the installed equipment. Keeping in mind it is very difficult to assign an accurate value to added wear and tear on equipment, estimates ranged right around $1 million per location (including slice interruptions and slowdowns). This year at Caro, we dredged the flume pond 11 times to keep the water flowing; whereas we would normally only dredge three times during campaign. Sebewaing had to dredge an extra three times. Combined, these two locations spent an extra $100,000 for campaign pond dredging. This does not include the extra costs of handling and disposing of this material, which will easily reach another $80,000, or more (each) for Croswell, Sebewaing, Caro, and correspondingly more at our largest facility in Bay City.

In conclusion, during harvest in Michigan, time is often a commodity that is in short supply; however, a little additional time and care taken to make sure harvesting equipment is operating and cleaning as well as it can so you deliver a cleaner load of beets, will help your factories operate more efficiently, reduce operating and maintenance costs, and help to maximize sugar pack. Ultimately, less tare delivered helps maximize grower payments and the bottom line!

PICTURE 1 *Frozen clods of beets and mud will plug the flume, stop slice and can take an hour or more to remove, depending on where in the flume they stop;* **PICTURE 2** *The "bullseye" in the cossette mixer showing the soil, sand and grit that makes it through the slicers and into the pressed and dried pulp; .*

PICTURE 3 *Removing sand from the dewatering area where it was placed during campaign. The flume pond inlet end where the sand was dredged 11 times during this past campaign is in the foreground;* **PICTURE 4** *Some tare items removed at the slicer station. Note the stones with the ridges. These were against the knives for several revolutions of the slicer table and very likely ruined every knife they contacted;* **PICTURE 5** *A section of a pipe that carried highly abrasive flume water at the end of the season. Note all the holes worn through. This is an example of one of the things all factories are doing in an effort to accommodate water with a high abrasive content. This pipe was replaced with HDPE plastic with high abrasion resistance.*

William Gough is currently the Factory Manager at the Michigan Sugar Company Caro facility. He has been with the company since 1982, serving as an agriculturist and then as an agriculture manager.

Covered Piles & GPS Tracking Solutions

by Richard List, Ag Operations Manager

As Michigan growers continue to ask about increasing the number of cleaner/loader (Maus) operations, Michigan Sugar Company is looking at possible ways to allow more sugarbeets to be Maused.

One way would be to leave sugarbeets in piles in growers' fields and Maus them to factory locations between Thanksgiving and Christmas. In Germany, most sugarbeets being delivered are scheduled and Maused from grower field piles to factory sites for immediate processing. All piles delivered after the First of December are covered in November with a special fabric that allows moisture to escape while keeping rain and snow from entering the pile and freezing it solid. The fabric is unrolled on top of the field piles by a unique machine that attaches to the back of a tractor. A second attachment on the front of the tractor will tuck the fabric into the bottom of the pile to keep the wind from removing the blanket.

In 2014, approximately 24,000 tons of covered sugarbeets were left in 11 different growers' fields the first and second weeks of November. The field piles were 25 feet wide at the base, 10 feet high, and varied in length from 300 feet to 2,000 feet. Each linear foot of length in the pile has around 2.5 tons of sugarbeets. As the piles were built in November, weighed bags of sugarbeets were placed in the center and on top of the piles as a test to check for shrink. The piles were then covered with the special fabric. From the stored bags, shrink on top of the pile measured 12.2%; whereas, inside the

continued on next page

ABOVE (top to bottom): *Covering a sugarbeet pile with special fabric; tucking the fabric under the sugarbeets to keep it in place; the finished covered pile in the field; placement of weight shrink samples.*

ABOVE: *An aerial view of a covered sugarbeet pile in a field. In 2014, the field piles were 25 feet wide at the base, 10 feet high, and varied in length from 300 feet to 2,000 feet.*

pile, shrink was only 1.3%. Sugars and RWST were also compared. Sugars decreased from 19.65% at harvest to 18.95% in December. RWST dropped from 301.2# in November to 283.3# in December. Michigan Sugar Company plans to cover 25,000 tons again this coming fall, and if our research shows this is a positive way to store sugarbeets, 300,000 tons of field-piled sugarbeets could be possible in the future.

One concern when Mausing sugarbeets is how long the sugarbeets have been in the field piles before being delivered to the piling grounds. From past experience, we know that sugarbeets stored for a time, and then rehandled, do not store as well. If the field-piled sugarbeets are delivered and run across pilers or stackers, will we have storage problems? At this time, Michigan Sugar Company feels that 24 to 36 hours is the maximum time that sugarbeets should be left and then run across a piler. To monitor this time, Michigan Sugar Company is looking at placing Global Positioning System (GPS) equipment on harvesters that field pile sugarbeets and the cleaner/loader machines. This fall, we plan to monitor three different Maus operations as a test. The grower will have a special Michigan Sugar Company app on his or her cellphone that will be activated when they enter the field polygon. The app and the GPS equipment will monitor the grower's activity when harvesting and Mausing sugarbeets in that field polygon. In the future, all cleaner/;loaders and harvesters associated with the cleaner/loader that are delivering sugarbeets to pilers will require this GPS equipment.

If additional Maus operations are in the future for our company, we will need to determine the best way for storing the sugarbeets from these new entities — leaving them in growers' field piles until December with special covers, or limiting the time sugarbeets are on the ground before running them across pilers and placing them in our large long-term storage piles. Maybe a combination of both is the best solution. Another year of testing and obtaining good scientific information will help us make an informed decision as to which solution is the best for our Cooperative.

Richard List, Ag Operations Manager for Michigan Sugar Company, has been with the company for 19 years.

ABOVE, LEFT TO RIGHT:
Adam, Jim, Bill, Brandon and Luke Herford.

Herford Brothers: The Best Crop from the Soil Up

by Cassie Sneller, Agriculturist

The Herford family reduces tare through multiple techniques — planning seasons ahead and taking care of the land.

The Herfords keep tare in mind all year, working to remove rocks from their fields.

To the Herfords, whose operation is located north of Elkton, sugarbeet harvest is in their thoughts long before they even think about planting or choosing seed for the upcoming growing season. For this family farm, it starts with their crop rotation plan. Sometimes, this plan can take place years in advance. Due to the upcoming launch of Michigan Sugar Company's Tare Incentive Program, this year, in particular, the Herfords have taken a closer look at their harvesting system. They make sure each field is tiled well, the soil is tested, the pH is within range, and stones are picked to increase efficiency and reduce damage on machines. Once all of these things are checked off, a variety of seed is chosen, based on what each field needs.

During the growing season, a timely insecticide and fungicide program is used, as well as whatever the beets may need to increase yield. Many decisions also need to be made by the Herfords, well in advance of the upcoming harvest season. Should they participate in early delivery? If they choose to do so, what fields should they dig? Why should they dig those particular fields? For them, their usual plan is to harvest their least-tiled fields early, weather permitting, and save their best-tiled fields for long-term storage; furthermore, variety is also taken into consideration for increased sugar percentage. These decisions will be even more important to each grower with the Tare Incentive Program. Not only is this program an opportunity to make some changes or advancements within each grower's program, it could possibly change the beet payment for better or worse.

A simple thing to consider for this upcoming harvest, and every harvest, is to slow down and dig as shallow as possible. Another option to think about that could be an easy solution for high tare, is the possibility of getting a chain cart. Ask yourself, could getting a chain cart or upgraded harvest system improve your beet quality, increase payment or save you time? Regardless of what each grower decides to do, or the type of harvest system a grower has, tare should always be on their mind; not only during harvest, but from soil to seed, and planting to growth and development.

The Herford family is fortunate enough to be able to reduce their tare through multiple techniques, not through luck, but because they plan seasons ahead and take care of the land. They are also willing to take risks and try new things. Nonetheless, the Herford family does not know what the upcoming season will hold, but they do everything in their power to prepare the best crop from the soil up.

Cassie Sneller *is the Michigan Sugar Company Agriculturist for the Kinde/Meade area. Cassie joined the company in 2014 after receiving her Bachelor of Science in Animal Science, as well as Agri-Business, from Michigan State University in 2013.*

Forward Thinking at D & B Karg Farms

by Cassie Sneller, Agriculturist

ABOVE: *Dennis and Brian Karg of D & B Karg Farms*

ABOVE: *Brian and Holly Karg and their children, top to bottom, Brooklyn, age 13, Mitchel, age 11, and Felicia, age 7*

Self-sustainability is more than a phrase; it is a lifestyle for Brian and Dennis Karg. Located in Harbor Beach for just under 100 years, the Karg family has built from the ground up! Crop Year 1996 was a big year for D & B Karg Farms. Brian had just returned home from studying at Ferris State University, the farm was transitioning from a dairy operation to a beef operation, and it was also their first year growing sugarbeets. Since then, the farm has completed the transition phase from a small dairy herd with a few hundred acres to a 600-head beef operation with around 2,500 acres, of which 600 are sugarbeets.

Coming back to the farm was something Brian knew would always be in his future. Studying mechanical engineering only provided more opportunities for the family and the farm to be on the cutting edge of technology. Some of this new technology is seen in their harvesting system, as well as a new concept called TrackTill® on their planter. D & B Karg Farms is working together with a company from Iowa and Steve Poindexter (MSU Extension Sugarbeet Educator) to reduce some of the compaction during planting — nine trials are taking place this year on their farm. They also have added onto their spray boom to help with the amount of compaction. In addition to their harvesting and planting systems, the Karg family is very mindful of soil health. This upcoming year (2016), the farm will have its first field of sugarbeets under irrigation.

Brian and Dennis had always farmed conventionally, but in order to improve their quality and yield, their program needed to be examined and advancements needed to be made. Thus, making the switch from wide rows to narrow (22-inch) rows in 2010 was an easy decision and they now have a significant increase in tons per acre and sugar. Along with changing the row width, cover crops (rye and oilseed radishes) are used after wheat and before sugarbeets. This allows the soil to mellow and decreases wind erosion. All of this is done for the upcoming beet crop. In addition, to grow the best beets they can, D & B Karg Farms have switched from liquid to dry fertilizer in order to better manage the micronutrients. Tissue testing is used on the farm as a procedure to follow up on the success of the program.

In 2012, the farm invested in a Ropa Tiger self-propelled harvester. Brian, the one who operates the harvester, believes the biggest benefit to date is operator comfort! Labor savings is also a significant benefit, as well as the efficiency and quality of the harvested beet. This transition seemed only natural for the farm. As farms grow, work increases and time remains constant; therefore, again, something needed to change. This change opened many doors for the Kargs. Not only does it allow them to be more efficient during sugarbeet harvest season, but it allows them to dig in most situations; all the while reducing their tare.

TOP: *Dennis and Marcia Karg with Brian and his family;* **BOTTOM:** *D & B Karg Farms purchased a Ropa Tiger harvester in 2012, experiencing significant labor saving benefits as well as increased efficiency and quality of harvested beet.*

Comparing their conventional harvesting to their new Ropa harvester used today, tare has decreased significantly. Not only has the cleaning increased at the harvester, but a second cleaning is taking place in the cart. Brian was sure to point out that they have not seen a huge difference in their samples from the factory, but have personally noticed it within their returning truck weight and tare in the field. This year, the new addition to the harvesting system is a Kringstad chaincart. This new concept cart features a tank similar to the Ropa Big Bear cart, while featuring a narrow elevator (just 50 inches wide) and the ability to load up to 20 tons per minute at 14-½ feet high!

Within the next few years, and with the upcoming tare incentive, D & B Karg Farms is looking forward to being rewarded for their extra effort. Not only have they gone above and beyond, the Karg family has seen tremendous change since growing their first beet crop in 1996 and cannot wait to see what the future has in store!

Cassie Sneller *is the Michigan Sugar Company Agriculturist for the Kinde/Meade area. Cassie joined the company in 2014 after receiving her Bachelor of Science in Animal Science, as well as Agri-Business, from Michigan State University in 2013.*

Scholarships Help Shape the Future of Local Youth

Continuing and furthering education is important to Michigan Sugar Company and its growers. The Co-op, and a number of groups or districts of growers, are pleased to award annual scholarships that were created in recognition of the service of past board members and leaders of our industry. This year's deserving recipients are:

Albert Flegenheimer Memorial Scholarship

Emma Maust, of Bay Port, Michigan. She is the daughter of Brent and Emily Maust, and a graduate of Elkton-Pigeon-Bay Port Laker High School, with plans to attend Dordt College in Sioux Center, Iowa.

Guy Beals Scholarship Recipient

Lauren Maurer, of Harbor Beach, Michigan. She is the daughter of Duane and Diane Maurer, and a graduate of Harbor Beach High School. She plans to attend Delta College, pursuing a career as a dental hygienist.

Next Generation Scholarship

Kayla Ratajczak, of Munger, Michigan. She is the daughter of Chris and Karla Ratajczak, and a graduate of Reese High School, with plans to attend Saginaw Valley State University.

Central District Scholarships

Emma Maust, of Harbor Beach, Michigan. She is the daughter of Duane and Diane Maurer, and a graduate of Harbor Beach High School. She plans to attend Delta College, pursuing a career as a dental hygienist.

Adam Retford, of Owendale, Michigan. He is the son of John and Gina Retford, and a graduate of Owendale-Gagetown High School. He plans to attend Michigan State University, pursuing a degree in agronomy.

Brian Fox Memorial Agriculture Scholarships

Sarah B. Korvemaker, of Wyoming, Ontario. She is the daughter of Mr. and Mrs. James Korvemaker. She attended high school in Lambton County, and plans to attend University of Guelph (Ridgetown Campus), to pursue veterinary technology.

Derrick R. Leclair, of Dresden, Ontario. He is the son of Ron and Krista Leclair. He attended Ursuline College Chatham, Catholic Secondary School, and plans to attend University of Guelph (Ridgetown Campus), agriculture studies.

Loren Humm Memorial Sugar Beet Grower's Scholarship

Brooke Young, of Breckenridge, Michigan. She is the daughter of Justin and Jamie Stoneman. She attended Breckenridge High School, and plans to attend Saginaw Valley State University, majoring in marketing and communications, minoring in agricultural studies.

For more information on these scholarships, visit our website: www.michigansugar.com/community/scholarships.

Emma Maust

Lauren Maurer

Kayla Ratajczak

Adam Retford

Brooke Young

51st Michigan Sugar Queen Crowned

by Barb Wallace, Events & Promotions Coordinator

...and the Sweetest Girl in Michigan is Riley Smith of St. Louis!

Riley was crowned Michigan Sugar Queen at the annual Michigan Sugar Festival in Sebewaing on June 19. Crowned as first runner-up was Briley Harder, of Fenwick, with Leah Thornton, of Mayville, as second runner-up.

Riley, the daughter of Eddie Smith and Tammy Smith, is a recent graduate of St. Louis High School. She will be attending Delta College in the fall, majoring in animal science and minoring in agribusiness management.

First runner-up, Briley, is the daughter of Joel and Bridget Harder. Briley graduated from Saranac Jr./Sr. High School in 2014 and currently attends Central Michigan University. Briley is majoring in biomedical sciences with a focus on the healthcare profession.

Leah, second runner-up, is the daughter of Donald and Frances Thornton. Leah is a recent graduate of Mayville High School. Leah will be attending Eastern Michigan University majoring in biology, minoring in zoology and plans to become a wildlife biologist.

The Royal Court will be touring the state on the Pioneer Sugar float while making appearances in many local parades. Beginning with the Michigan Sugar Festival Grand Parade in June, they will also appear in two national parades; the National Cherry Festival Parade and the National Baby Food Festival Parade in July. They will also attend the ever-popular Cheeseburger Festival in Caseville in August and the Richmond Good Old Days parade in Richmond in September.

Be sure to check the Pioneer Sugar website and Facebook page for upcoming dates and times of appearances of this year's Sugar Queen and Court.

ABOVE LEFT: *Riley Smith, 2015 Michigan Sugar Queen, poses in a local sugarbeet field.* **ABOVE RIGHT:** *The 2015 Queen and Court, left to right, Briley Harder, Riley Smith and Leah Thornton*

Michigan Sugar Company sponsors the Michigan Sugar Queen competition. As the sponsor, the Company and grower-owners provide the queen with a $2,000 scholarship for use at the university of her choice. The first and second runners-up are each awarded a $1,000 scholarship.

ABOVE: *The 2015 Queen and Court ride on the Pioneer Sugar float in the Michigan Sugar Festival Grand Parade*

A SPIRIT **OF INVOLVEMENT**

by Ray VanDriessche, Director of Community and Government Relations

When approached about an opportunity to become involved, we sometimes hesitate because we think that we either do not have the time or the talent to fulfill the commitment. We may feel passionate about something, but are afraid to say "yes." Not taking the next step and committing to become a volunteer, or serving in some capacity, is selling yourself short of an opportunity for personal enrichment, while at the same time serving others. Sharing of our time and talents has a positive impact on us, personally, as well as our families and the community in which we live.

You do not have to look very hard to find great examples of Michigan Sugar Company grower-owners and employees who are willing to share their time and talents in their communities. They serve on church committees, township boards, county fair boards, Farm Bureau boards, commodity organization boards, school boards, the local chamber of commerce, and volunteer with United Way, Habitat for Humanity, and Big Brothers and Big Sisters. In most rural communities, there would not be a fire department if it were not for those volunteers who are willing to commit to hundreds of hours of firefighting training and first responders' medical training to respond at a minute's notice, day or night, to an emergency situation. Ask anyone serving on organizational boards, such as the Michigan Sugar Company District and Co-op Boards, and I am sure they will tell you that the commitment provides an opportunity to represent the interests of the broader community, understand what they may have questioned before and to become a part of the decision-making process.

A great example of saying "yes" when asked to become involved are two young women, actively involved in farming operations, who are a part of Michigan Sugar Company ownership. Rita Herford and Allyson Maxwell have volunteered to serve as industry spokeswomen to educate the public on the benefits and safety of GMO-derived foods and refute the misinformation that is so rampant on social media. They will represent not only the Michigan sugar industry, but indirectly all of Michigan agriculture involved with the production and processing of foods derived from GMO crops.

Allyson Maxwell says, "A good avenue into volunteering and getting involved with local organizations is starting with what motivates you. Once you find a good fit, it feels good to be active and the organization you serve benefits also. It is a win-win. I feel strongly about the benefits of planting GMO seed, especially for sugar producers like us. I see a lot of misinformation on social media that causes confusion for our consumers. I think the current perception of farms that plant GMO seed is very negative, and one way I can work to change that is to give our farm a face and a voice that people can relate to. Hopefully, I can also help bring truth and fairness to the subject."

Rita Herford shared, "When I came home from college, I realized I wanted to get involved in agriculture outside of our farm. I started attending county Farm Bureau board meetings and was soon elected to the board. Learning that 98% of the population has little or no ties to agriculture has really opened my eyes to how little the general public knows about farming, yet most people are concerned about how their food is being produced. Telling my story and talking to people about how I grow food for them helps bridge that gap and creates an opportunity to educate consumers on farming. In agriculture, it is easy to ignore the bigger picture and just worry about your own operation; however, our industry, as a whole, will suffer if no one is willing to step up and do a little extra. If we want the consumer's perception on production agriculture to change, then some of us farmers are going to have to be willing to do something about it. In most cases, your time is all that is needed."

Often, the rewards of saying "yes" and becoming involved are greater than we had imagined, the actual commitment is less than we had conceived it would be, and the road it may lead us down offers opportunities never foreseen at the time.

Michigan Sugar Company's owners and management fully support and encourage volunteerism and a spirit of involvement and firmly believe that this type of service is a major part of the fabric that holds communities together. Promotion of that philosophy, as well as building leadership qualities, is at the core of our Outstanding Young Farmer and Youth Project programs. The programs were developed with the belief that the experience gained from participating will help to develop a level of comfort and confidence that will make it easier to say "yes" when asked to step up and make a difference.

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Looking to the Future of Sugarbeet Farming

YOUNG FARMERS PROGRAM
MICHIGAN SUGAR COMPANY

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's **Young Farmer Program** provides a forum for young sugarbeet growers between the ages of 18-35 who are interested in learning more about the sugar industry and Michigan Sugar Company while developing leadership skills. The **Young Farmer Program** gives growers of a similar age the opportunity to network and discuss issues common to the next generation of farmers.

This 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 has the opportunity to participate in activities specifically designed to help them gain an enhanced understanding of our cooperative. These young farmers also learn how to become more successful sugarbeet growers and future leaders in our industry.

If you are interested in becoming part of Michigan Sugar Company's **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
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