



vest operations (“Direct Delivery” and “Stacking”) have been developed at Michigan Sugar Company since the machines’ introduction into North America in 2002.

“Direct Delivery” allows traditional sugarbeet receiving stations to remain idle during the prepile segment of harvest. This system permits a fresher beet going to the factory wet hopper than do conventional pile receiving operations, and simultaneously offers advantages for participating growers. During early (prepile) delivery, the grower harvests and piles the crop in the field. It is cleaned and loaded there by the field cleaner/loader, then delivered directly to the processing facility’s wet hopper via commercial transfer trucks. Grower delivery to the piling yards is thus bypassed, and the yards remain closed during this phase.

A lottery system was developed to determine a grower’s eligibility for acreage selection. Once growers submit acreage requests (around 50 acres per slot), a harvest order list is created after the acreage request slots are computer scrambled. Growers are allowed to trade or sell positions within their growing area if approved by a company representative. Early delivery participation is voluntary, but the company controls when the growers harvest their crops in order to ensure field loading efficiency. Communication between the grower and his company agronomist is paramount to making the system run smoothly.

Growers harvest their field acreage as scheduled by the co-op. They can use their own harvesters, trucks and carts to pile the beets, with roadside loading in mind. Beets are cleaned in the field and loaded by the machine onto large transfer trucks, then delivered to the factory wet hoppers.

This “Direct Delivery” system provides several advantages for growers:

- Transfer freight costs are the same as when delivering to the piling yard.
- No additional trucking costs are incurred.
- There is no waiting in long lines at the pilers.
- Labor costs are reduced.

The cooperative also benefits in multiple ways:

- The piling facilities remain idle from the start of prepile to the time of permanent piling, thus reducing labor and electricity costs as well as maintenance and repairs to the pilers themselves.

- Early harvest havoc is eliminated, with less traffic on the roads.

Traditional Beet Piling Alternatives

How Michigan Sugar Company Utilizes Cleaner/Loading Machines & Stacker Pilers

By Keith Kalso*

Michigan Sugar Company and several of its growers have, for the past decade, utilized the sugarbeet field cleaning/loading technology commonly used in the European beet sugar industry. That approach continues as of the upcoming 2013 harvest season.

A sugarbeet field cleaning/loading machine simultaneously cleans and loads field-piled sugarbeets, leaving most of the tare soil at the field. A typical Ropa Maus machine has an intake header roll bed of 160 sq. ft., a center intake conveyor of 67 sq. ft., a rear roller bed of 64 sq. ft. and a truck conveyor of 90 sq. ft., for a total capacity of 381 sq. ft. of root cleaning surface. By comparison, traditional beet piler roller cleaning beds measure +/- 100 sq. ft.

Since 2002, Michigan Sugar Company has transitioned from one cleaner/loader to 13 operating grower-owned machines (both Ropa Maus and Holmer Felis) in 2012. Growers with access to this system are permitted to field-pile sugarbeets in field clamps for short periods of time. The cleaner/loader is used to field-clean piled beets and then load onto large transport trucks for “Direct Delivery” to factory wet hoppers or for “Stacking” onto modified sugarbeet pilers.

The first Michigan Sugar-utilized direct-delivery cleaning/loading system employed the German-built Ropa Maus in Lambton County, Ontario. Slow but steady growth of this technology continued across the company during the past decade: two operations in 2004, four in 2008, six in 2010 — and, as of 2012, there existed a total of 13 field cleaning/loading operations at Michigan Sugar Company. The separate har-

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• The factories are processing fresher beets.

Four of Michigan Sugar Company's piling yards were closed for prepile in 2010, six in 2011, and seven yards closed in 2012 from the start of prepile until October 20. During the 2012 prepile harvest, 38% of slice — about 411,000 tons — went directly to four factory wet hoppers via "Direct Delivery." For the 2013 harvest, Michigan Sugar will idle one additional receiving operation at prepile time.

"Stacking" is the second process used at Michigan Sugar utilizing the cleaner/loading machines. It is done during the permanent pile harvest segment. Beets are field-piled briefly, cleaned and loaded at the field roadside, then delivered to piling sites, where a stacker (converted beet piler) places them in long-term piles. A stacker is a simplified sugarbeet piler (less the cleaning bed) that conveys beets from trucks to a boom for placement into a traditional long-term storage pile. Stackers have a higher volume capacity, allowing two trucks to dump simultaneously and thereby increasing efficiencies for both the grower and the piling yard.

"Stacking" provides advantages for both the grower and the cooperative:

- Tare dirt stays in the field where it belongs, eliminating cross contamination at the pilers.
- Old pilers can be converted into efficient stackers.
- The field cleaning/loading machine cleans and handles beets very well, with the operator able to monitor and adjust the cleaning bed.
- When stackers operate, there is less truck volume at the piling ground since fewer trucks are required to do the same job.
- The grower realizes reduced freight costs because there is less soil to haul and less mudding up of roads.
- On the co-op side, a continuous supply of beets can be maintained since 24-hour stacking can be orchestrated. Predictability leads to greater efficiency.

The "Stacking" protocol is pretty straightforward: lay the beets down

During MSC's 2012 permanent pile harvest, four field cleaners delivered to stackers and nine field cleaners delivered to wet hoppers. That equated to 70% of the slice from Oct. 20 to Nov. 20.

Michigan Self-Propelled Harvester Demo Sept. 18

A harvest demonstration featuring self-propelled sugarbeet harvesters from four different companies is scheduled for Wednesday, September 18, near Sandusky, Mich. The event, coordinated through Michigan Sugarbeet Advance-ment's Research Extension Advisory Council (REACH) initiative, is open to all interested persons.

Featured are self-propelled topper/digger units manufactured by Ropa, Holmer, Grimme and Vervaet. The harvest location is along Townline Road, on the west side of Sandusky. The two adjacent beet fields are planted to 20- and 22-inch rows, respectively.

Registration is planned for 8:00 to

9:00 a.m. on the 18th, with the in-field harvesting demonstrations then conducted from 9:00 until 4:00 p.m. Each machine's demonstration will be accompanied by discussions with company representatives. Demonstrations will be repeated morning and afternoon.

Beets harvested by the self-propelled units will be piled on field headlands, with truck loading and cleaning equipment and procedures also demonstrated.

Lunch will be served at the demonstration site. There is no registration fee.

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and pick them up in three days or less. A three-day stale date was established as a reference for picking up field-piled beets; this time frame seems to work well without sacrificing beet long-term storability. To make the "Stacking" program run smoothly, however, requires intense management, control, cooperation, commitment, resources and communication.

"Stacking" is not without challenges for the grower: field accessibility is very important, and growers can't always harvest when they want to because the schedule must be governed by the company. Challenges on the co-op side include: root condition and cleanliness of stacker loads, the duration that clamps are piled in the field, and the duration that long-term stacker piles remain in storage.

Michigan Sugar Company used three stackers to pile 65,000 tons of beets in 2010. Those three stackers piled 136,000 tons the following year; and in 2012 four stackers piled 209,000 tons or 8% of the cooperative's beets.

Eight field cleaners were used for "Direct Delivery" during the 2012 MSC prepile harvest. During last fall's permanent pile harvest, four field cleaners delivered to stackers and nine field cleaners delivered to wet hoppers. That translated into 70% of the slice from October 20 to November 20 (15,000 to 20,000 tons per day, for a total of 509,000 tons). One converted Ropa Maus recovered 133,500 tons of beets from permanent piles once harvest was completed.

The North American sugarbeet industry likely will see more of this field cleaning/loading technology integrated

into traditional methods. Michigan Sugar Company has placed a moratorium on field cleaner operations for now since the company slice capacity is being fully utilized by these cleaner/loader machines. The "Stacking" program will expand from four to five stackers in 2013, piling approximately 318,000 tons. ❖

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