

Innovative Alternatives to Traditional Piling of Sugarbeets

March 5, 2011

Keith Kalso

Michigan Sugar Company



Increasing Beet Piling Efficiency Ropa Maus Beet Machine

- Direct Delivery
- Stacking field cleaned sugarbeets



Timeline of Ropa Maus Operations at Michigan Sugar Co.

- 2002: Field piling; Maus @ Lambton, Ontario
- 2004: Field piling; Maus @ Lansing, MI (Moore)
- 2006: Field piling; Maus @ Ruth, MI (Roggenbuck)
- 2006: Large pile recovery test @ Dover pile station
- 2007: Michigan Sugar leases Maus for pile recovery
- 2008: Field piling; Maus cleans & loads all of growers pre-pile crop @ Dover (“Dover-Direct”)
- 2010: Field piling; grower Maus cleans & loads all of growers pre-pile crop @ Ruth (“Ruth-Direct”)
Stacking of field piled beets begins @ 2 stations

Direct Delivery – loading system brought to growers fields



Direct Delivery – loading system brought to growers fields

- Grower harvests & piles crop in field
- Crop cleaned/loaded in field by Maus then.....
- Delivered Directly to processing facility on large transfer trucks
- Growers delivery to piling yards bypassed

Maus Cleaning System

- 1st Stage: header roll bed



Maus Cleaning System

- half of header underside roll bed shown



Maus Cleaning System

- 2nd Stage: front belted chain conveyor



Maus Cleaning System

- 3rd Stage: grab roll bed



Maus Cleaning System

- 4th Stage: back belted chain conveyor



Field Loading With Maus



Field Loading With Maus



Direct Delivery – How it Works

- Lottery system used to determine grower's eligibility for field selection
- Piling sites evaluated before harvest for efficient and safe truck loading in all weather
- Co-op employee takes tare in field

Direct Delivery – Field Employee



Direct Delivery – How it Works

Field Accessibility very important

Direct Delivery – Accessibility



Growers Responsibility

- Harvest field when scheduled by Co-op
- Allowed to harvest entire field
- Growers use trucks & carts to build piles
- Pile crop with roadside loading in mind

Roadside Loading



Roadside Loading

- Safety was promoted to the public
- Meetings held with county road commissions
- Municipality approved the system
- Safety training to establish “work zone”
- Sustainable



Field Loading With Maus



Direct Delivery Statistics - 2010

- Pre-pile harvest began August 26th 2010
- Two receiving stations kept closed
- All early delivery beets shipped direct
- Delivered to three factory wet hoppers

Last Pre-Pile Beets shipped 10/22/10



Direct Delivery - Grower

- **Grower transfer freight costs same as delivering to piling ground**
- **No additional trucking cost incurred**
- **No waiting in long lines at pilers**
- **Reduced labor costs**
- **No harvest pressure in the field**
- **Allowed to harvest on the farms time-line**

Direct Delivery - Cooperative

- Piling facility remains idle from start of harvest to time of permanent piling
- Eliminates early harvest havoc
- No labor or electricity spent
- Less repair & maintenance needed for pilers
- Less traffic on roads: safer & saves roads
- Co-op pays Maus owner for cleaning/loading
- Extra cost of freight being evaluated
- Fresher beet going into plant

Field Loading With Maus



Dura Mats for truck in field

Field Loading With Maus



Stacking

- The next phase of Direct-Delivery
- Field pile the crop for brief time
- Clean & load by Maus
- Deliver to piling site
- Use “Stacker” to pile the crop
- Place crop in long-term storage piles

Stacker – A Converted Beet Piler



Why Stack???

- Disconnects harvester from piling yard
- Convert old beet pilers to Stackers
- May reduce freight costs
- Tare dirt stays in field where it belongs
- Maus cleans & handles beets very well
- Maus adjusts to conditions
- Operator monitors screen/cleaning bed

Stacking Advantages (Growers)

- Harvest/piling are disconnected
- Less freight (?)
- Less trucks required for same job
- No line ups
- Eliminates cross contamination at piler
- Mud up loading zone only
- Eliminates working shifts

Stacking Advantages (Cooperative)

- No line up = less stress
- Less labor
- Continuous supply
- Predictability>>Efficiency
- 24-hr stack easily done
- Grower or Grassroots partnership for cleaning and handling crop

Stacking of Field Piled Beets



Stacking Protocols/Procedures

- **Fresh!!!**
- **Lay beets down and pick them up ASAP**
- **3-day window to stale date**
- **Day 1 Great >> same as piler**
- **Day 2 Good >> same as overnight in truck**
- **Day 3 OK >>**
- **Day 4 ?????? >> Why??**

Requirements of Stacking

- Intense management
- Control
- Co-operation
- Commitment
- Resources
- Communication

Stacking Increases Piling Efficiencies



Stacking Disadvantages (Grower)

- **Accessibility is paramount**
- **Can't go when you want to >> must be governed by management**
- **Tare dirt >> hot strips**

Stacking Disadvantages (Cooperative)

- Requires intense management
- Creating too many priority beets !!!!!!!!
- Freeze
- Stale date expires

Chute Installed in Dump Hopper



Reduce Spillage & Labor



Uses of Maus System - Harvest 2010

- Michigan Sugar extends Maus lease
- Storage pile recovery in Dover, Ontario
- Storage pile recovery in Sandusky, MI
- Direct delivery of field piles in Lambton, ON
- Direct delivery of field piles in Dover, ON (*)
- Direct delivery of field piles in Ruth, MI (*)
- Direct delivery of field piles in Gratiot, MI

Uses of Maus System - Harvest 2010

- Field piling with stacking in Dover, ON
- Field piling with stacking in Sandusky, MI

Where Does MSC Go From Here?

Direct Delivery in 2011

- Expand from 4 to 7 operations

Where Does MSC Go From Here?

Direct Delivery in 2011

- Expand from 4 to 7 operations

Stacking in 2011

- Expand from 2 to 3 operations

Where will the Future Bring Us Next?

Thank you!

Questions?