Innovative Alternatives to Traditional Piling of Sugarbeets

March 5, 2011

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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



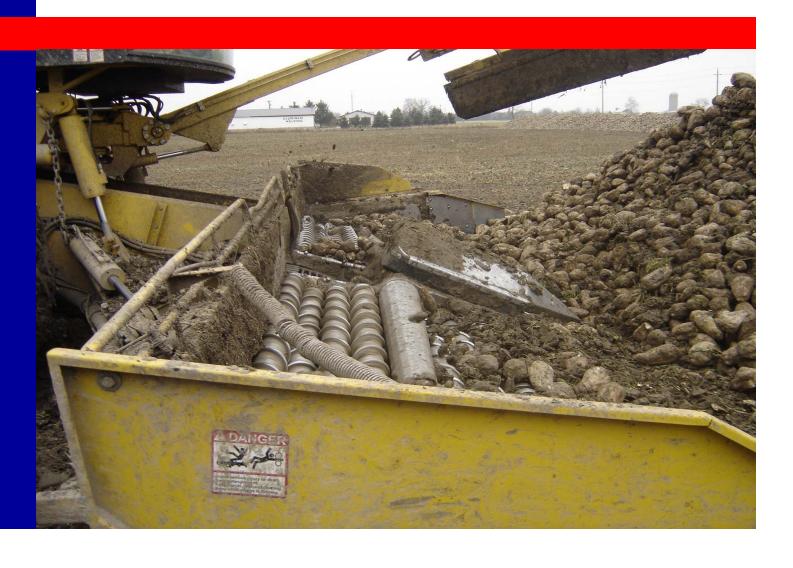


Direct Delivery – loading system brought to growers fields

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

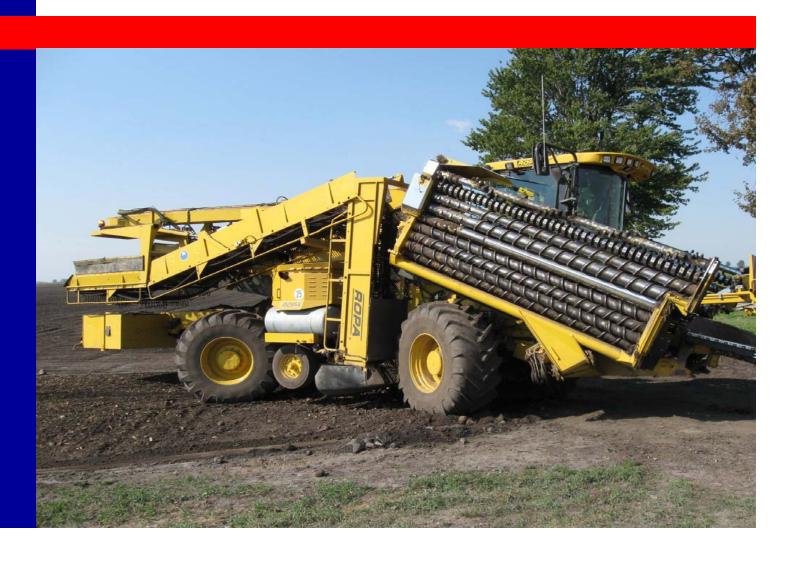


•1st Stage: header roll bed





half of header underside roll bed shown



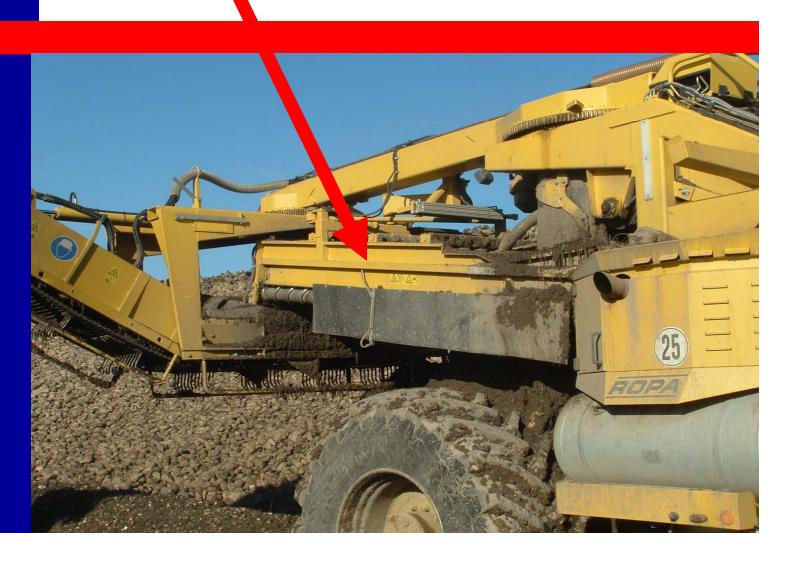


• 2nd Stage: front belted chain conveyor





•3rd Stage: grab roll bed





• 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





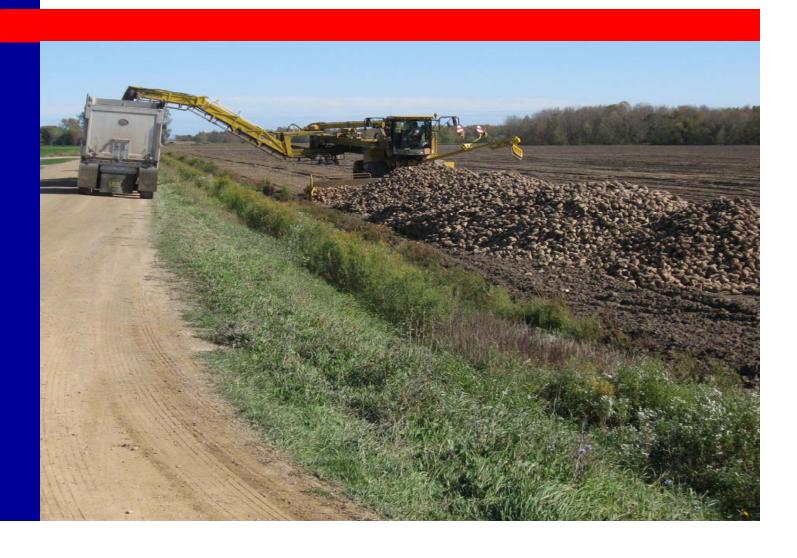
Roadside Loading

- 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



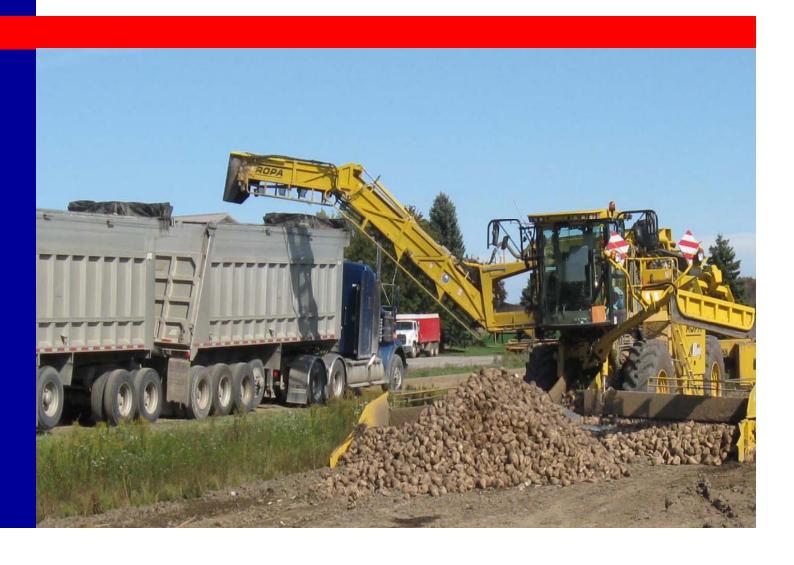


Direct Delivery Statistics - 2010

- 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

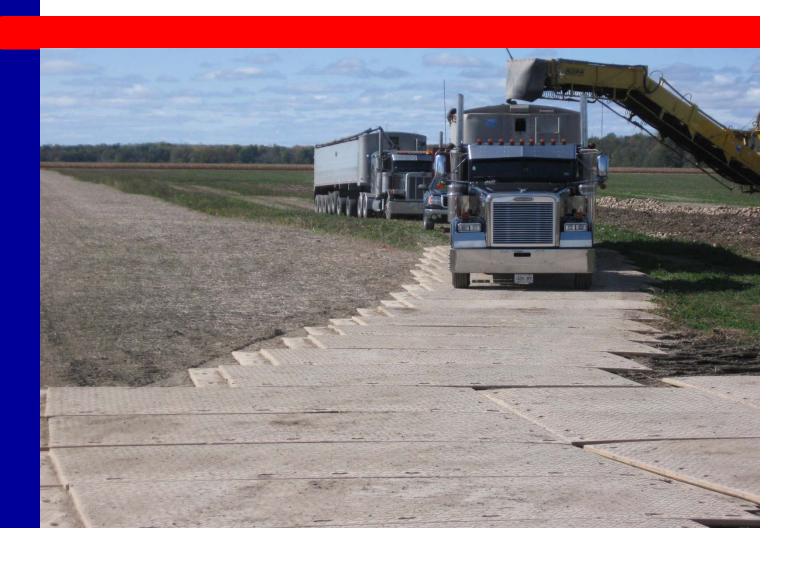


Field Loading With Maus





Field Loading With Maus





Stacking

- The next phase of Direct-Delivery
- Field pile the crop for <u>brief</u> 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

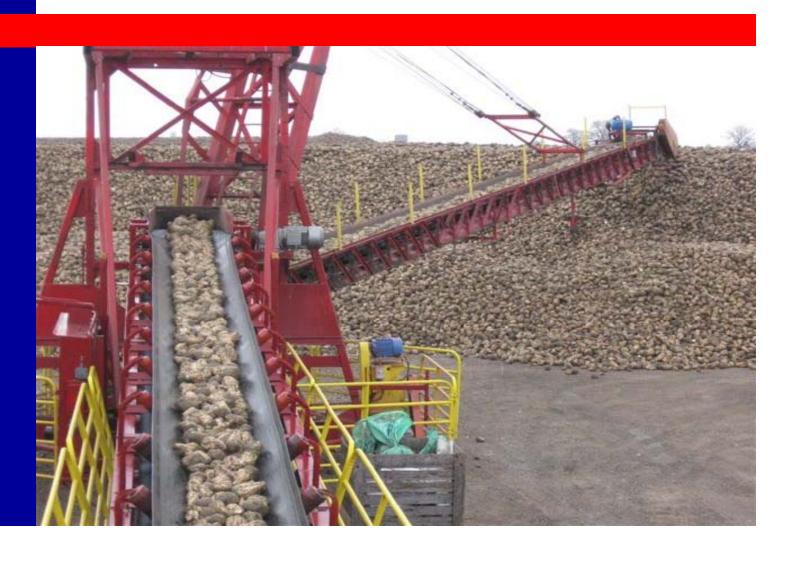


Stacking Advantages (Cooperative)

- 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?

