

Dextran

Lance Rodriguez

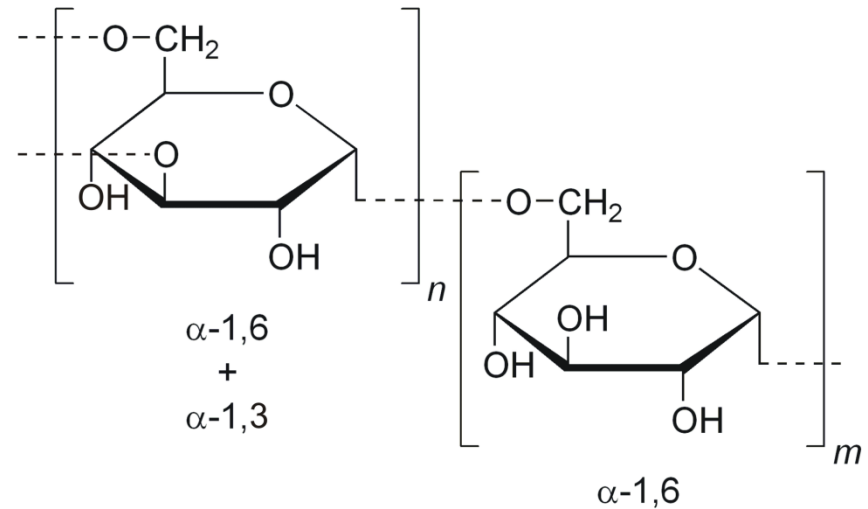
Alan Chatman

Alma Plantation, LLC

What Is Dextran?

Dextran is a carbohydrate gum formed by the breakdown of sucrose

Dextran comes into the mill with the sugarcane and is responsible for sugar losses and operational issues in the mill



Where Did it Come From?



- Microorganisms are everywhere in the soil and can invade unprotected/exposed sugarcane tissue.
- Leuconostoc bacteria is the microorganism responsible for Dextran production.
- The mucous producing Leuconostoc species of bacteria consumes sucrose for food and produces Dextran.

Consumption of sucrose = \$\$ losses

When Did It Invade The Cane?

Cut ends from combine harvesting expose tissue to microorganisms. The time lag between cutting cane and crushing cane is most responsible for the growth and increase of microorganisms in harvested sugarcane.



Burning cane can crack the rind and cause juice to ooze out of the stalk providing ample food for Leuconostoc.



Atmospheric Conditions

Warm, wet, & foggy harvest conditions contribute to the presence and proliferation of microorganisms, particularly *Leuconostoc* which requires wet conditions.

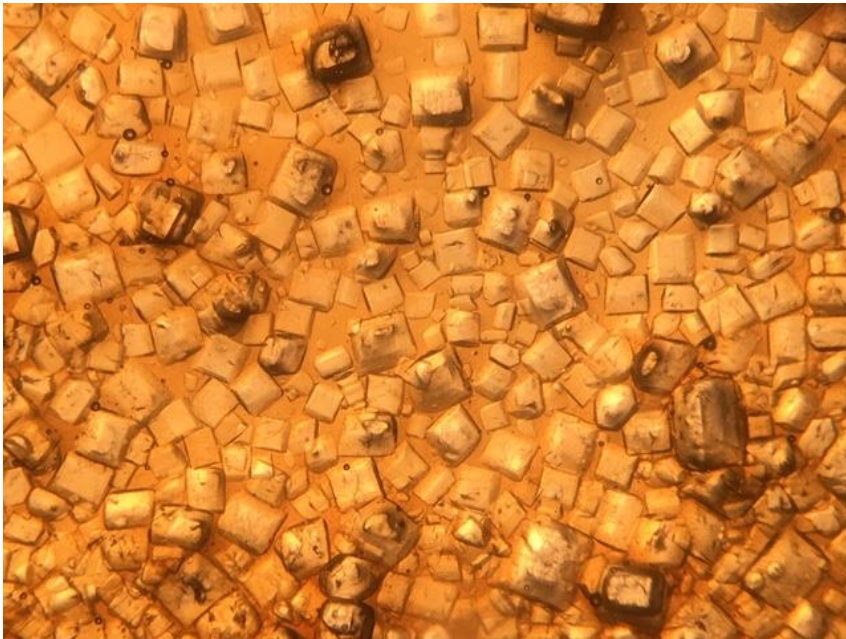


Dextran Impact

- Increase Mill Cleaning/Sanitation
- Biocide Consumption
- Use of Costly Dextranase Chemical
- Crystal Elongation / False Grain
- Increases Viscosity of Massecuities
- Difficulty Centrifuging Massecuities
- Increase in Final Molasses
- Sugar Losses
- Loss of Time and Capacity in Boiling House
- Penalty for Dextran in Raw Sugar

Elongation of Sugar Crystals

Square Grain



Elongated Grain



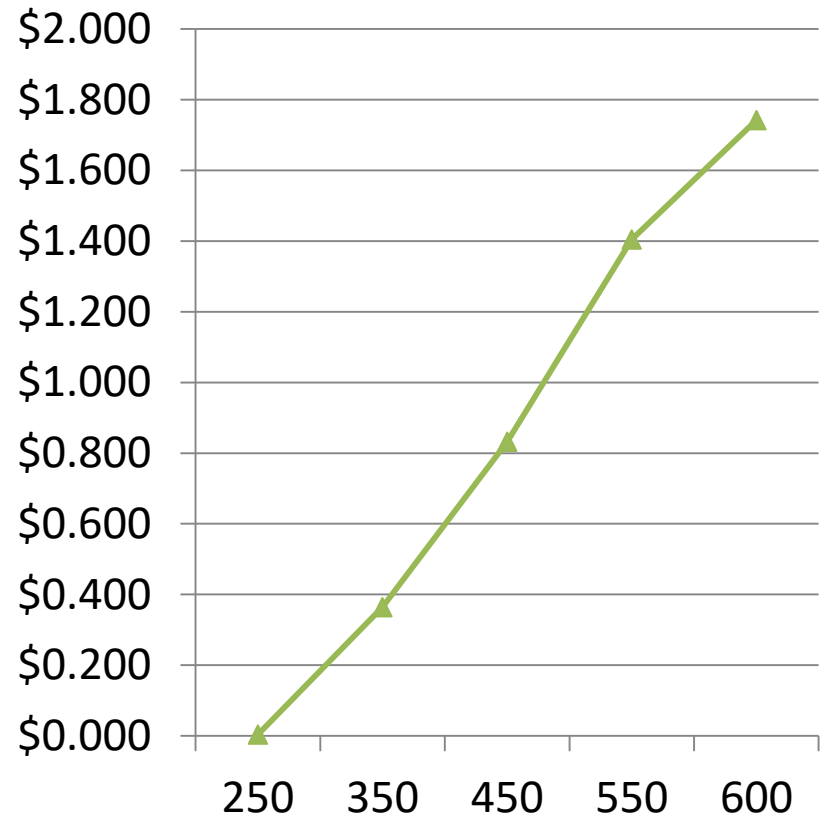
Dextran in Raw Sugar Penalty Example

- **Dextran**
- For each 1 unit above 250 up to and including 350 deduct 0.014 percent of basis price.
- For each 1 unit above 350 up to and including 450 deduct an additional 0.018 percent of basis price.
- For each 1 unit above 450 up to and including 550 deduct an additional 0.022 percent of basis price.
- For each 1 unit above 550 deduct an additional 0.026 percent of basis price.

For Example:

A 15,000 ton per day mill could receive a penalty of \$28,000 per day for 450 MAU dextran

Penalty \$ Per Cwt Sugar



What Can You Do?

Do your part to reduce the cut to crush time.

No overnight loads in trailers or cane carts



Do not burn more than one day's quota of cane, e.g. rain is coming and the temptation will exist to burn a few days of cane....don't do it.



**Deliver clean cane
free of mud and
trash.**



References

- Dr. Harold Birkett
- Cane Sugar Handbook 12th Ed – *Chen & Chou*
- Cane Sugar Engineering – *Peter Rein*
- Google Books Online
- Microorganisms affecting Post-Harvest
Sucrose Losses in Sugarcane – *Intl. Journal of
Current Microbiology and Applied Sciences*
- Sugar # 16 Contract - *ICE*