

# Harvesting Planning and Practices to maximise Recoverable Sugar

**Don McCulloch**

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# Outline

- A bit of history
- Sucrose vs Dextrans
- Planning the harvest
- Operational considerations when harvesting sugarcane
- The future?

# History

- Why the fuss?
- Dextrans cause the biggest catastrophic harvesting loss: rejected cane.
- Crushed fresh cane has a higher recoverable sucrose than cane that has been infield.

# Why is best economic practice not practised?

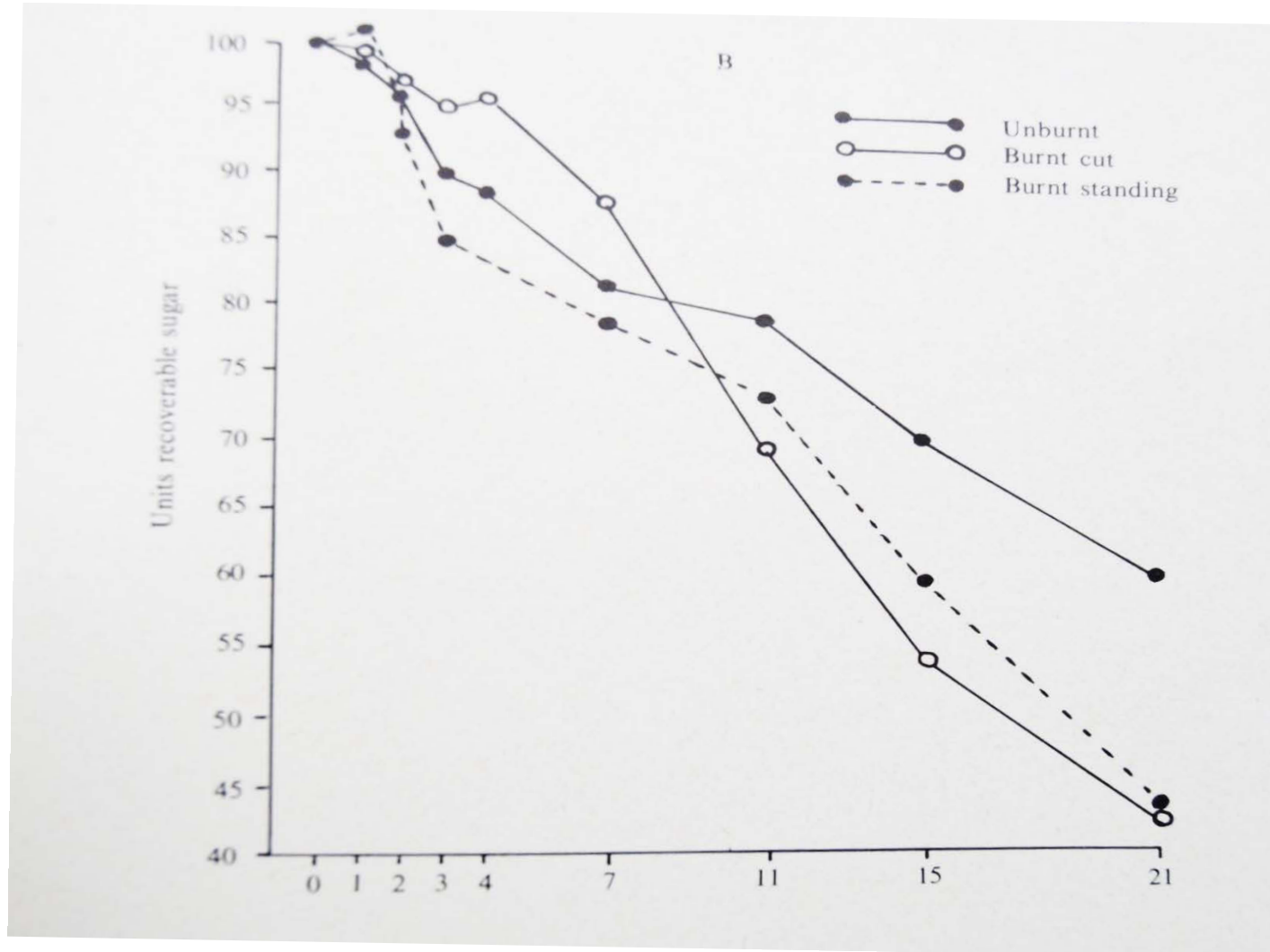
- Why don't growers get their cane into the mill timeously (defined as 48 hours from killing the cane to crush).
- **Average** delay from burn/cutting the cane to crush is estimated at 72 hours.
- Komatiport is good at 60 hours on average.
- Why burn rather than green cane harvest?

# Why is best economic practice not practised?

- Burn to crush figures are not formally measured in the industry.
- Rural myth: RV goes up when harvested cane is left infield.
- The most expensive stick harvested, is the one inadvertently carried over. As the cane becomes older it lodges and is more prone to eldana.

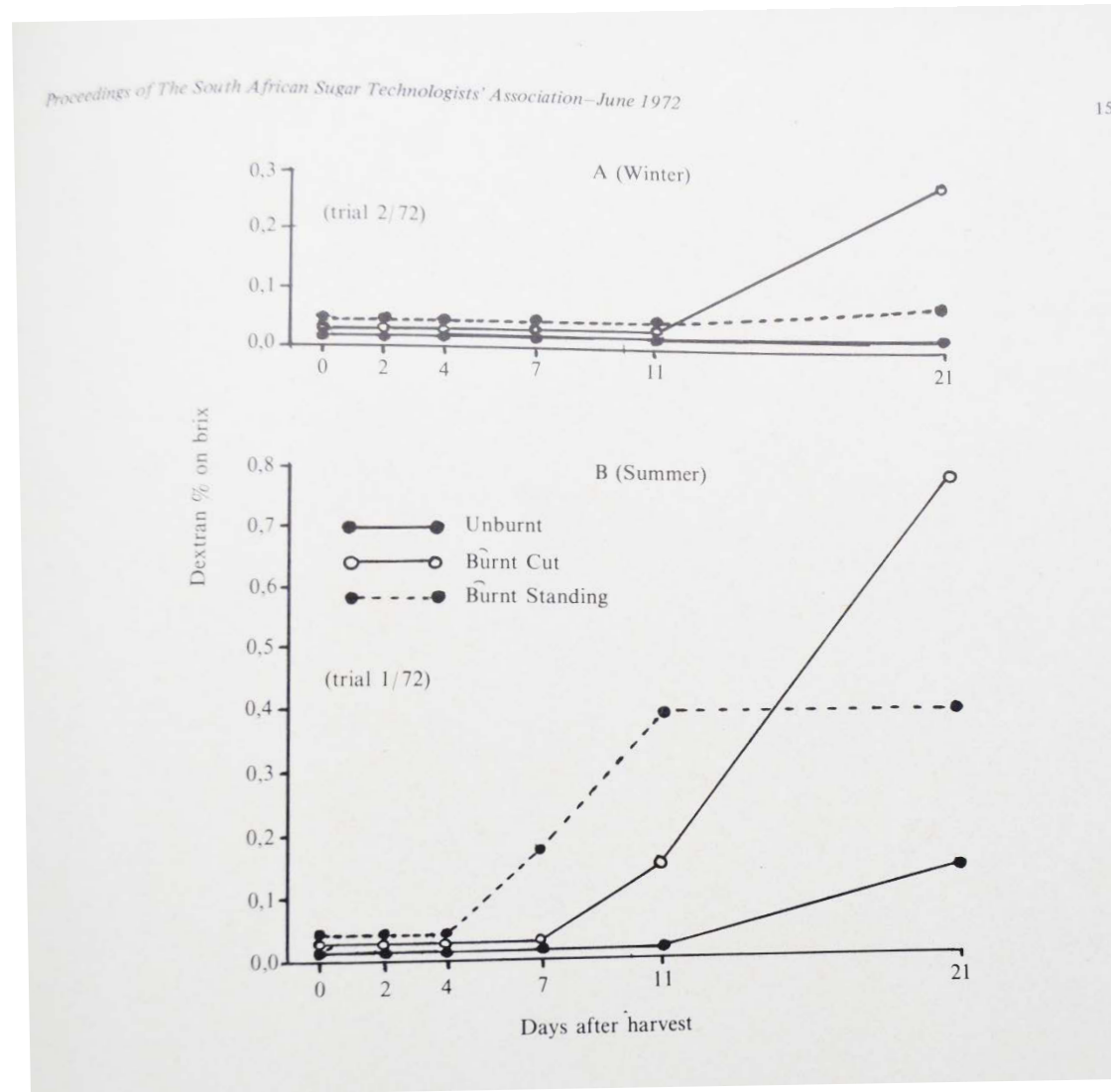
# Deterioration Losses in whole stalk sugarcane.

*SASTA June 1972 pg 151 R.A.Wood, JJ Du Toit, J.Bruijn*



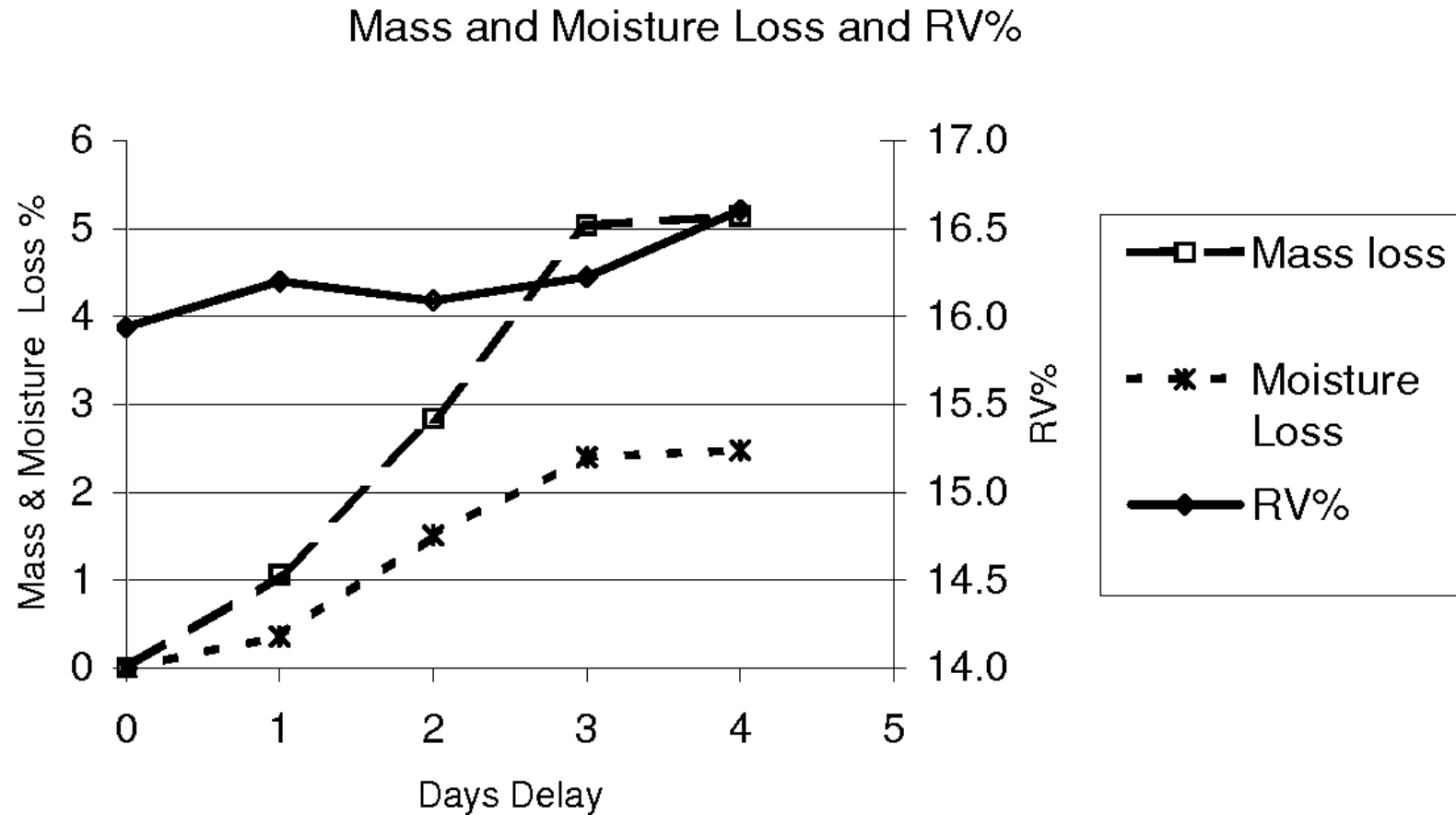
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# Impacts of Harvest to Crush delay on Grower Revenue

*Peter Lynne and Eddie Meyer 2005*





# Recoverable Sucrose

- Rural myth
- Fact: The R.V.% for the first week after cane has been burnt, often does go up. Especially in winter.

The total value of the crop goes down after the stick dies.

# Harvesting Planning affects RV

The total value of the crop goes down after the stick dies.

- Land use plan.
- Ease of haulage, fewer breakdowns.

# Estimates

- Accurate?
- Estimates inflated to get more allocation at the beginning of the season and in winter when sucrose % is higher.
- Winter is the best time to harvest from an agronomic point of view, less compaction, ease of haulage.
- **Fear of Losing out.**
- Getting the crop off can be likened to a limited over cricket match. Finite period to get the crop off. Time lost is time gone, if it happens too often in a season cane is left behind.

# Estimates

- Order of cutting needs to take into account varieties, planting programmes and environment (wet valleys and frost pockets in winter).
- Pests (in particular eldana) and diseases can alter the cutting order of fields at short notice.
- Use of harvesting plan to reduce big unplanned fires.

# Capacity

- Economies of scale. The smaller the unit harvested the more disastrous a breakdown becomes. Especially cranes.
- One big benefit of having large contractors.

# How much labour?



The attrition of labour through the season and the difficulty in replacing lost cutters after September, leads to more being employed in the beginning of the season.

The quality of cane to cut varies on most farms. From perfectly straight cane in high yielding fields...



...to lodged,  
weedy fields with  
poor yields.  
This means that  
typically up to 10%  
more cutters are  
carried in order to  
maintain  
allocation.





# Green cane Harvesting (Trashing)

- Trashing mixed with burning can help with capacity issues.
- Need more cutters and machinery for trash.
- Transport loads tend to be lighter when trashed. (Variety can play a part here). Self trashing varieties with a heavy stick are first prize.
- Generally trashing costs 25-30% more to harvest. Greater cutting costs and smaller payloads.

**Most mills need cane delivered on Sunday,  
this encourages stock-piling.  
Rain days.**



# Cutting Systems

- Mechanical Harvesting
- Cut and windrow
- Cut and bundle



# Main Systems

## Mechanical harvesters

- **Advantage:** less labour.
- **Disadvantages:**
  - Problems with slopes, stones
  - Capital cost/spares (one unit)
  - Quality of base cutting, stalk smashed rather than a clean cut.
  - Cost



# Cut only Windrowed

- Trailer loaded with a grab loader, direct to the mill or hold the cane on a zone, and tranship to a mill in a hilo.
- Disadvantage: ash, dirty zones, compaction, stool damage.
- Advantage: cane can be very fresh.



# Cut and Bundle

Typically delivered to a zone in bundles and transhipped.

## Advantages

Cane can be moved off slopes.

Less compaction and stool damage.

Zones generally cleaner.

## Disadvantages

More labour

Cost of chains



# Never forget THE BASICS

- Base cutting.
- Topping depends on the distance from the mill. Needs constant supervision especially when cutters are paid on tons cut.
- A decent weed free stand of cane needed to produce tops that are the same height.
- Of interest the Noodsberg growers and mill have taken the decision to top lower to increase the % of sugar in each stick milled because the crop this year is stretching the mill's capacity.

# The Future

- Use Controlled Traffic Farming - tram lines in field.
- Ease of haulage.
- Dextrans reduce the sugar quality, reducing the price obtained for the sugar. This in addition to the extra milling costs involved.
- Dextrans lead to rejected cane - a complete loss of crop.





# Practices to mitigate against the production of Dextrans

- Change in CTS procedures to measure dextrans at the mill gate?
- Changes in harvesting procedures to mitigate against the formation of dextrans.
- Operations that keep cane off the ground (bundles vs mechanical loading)
- Spraying bactericides on zones
- zone hygiene
- Effect of varieties and the age of cane on dextrans.

# Mill Group Board

Should mill group boards be  
'harder' on those who over-deliver  
causing mills to close before all the  
cane is crushed?

# Last Word!

The reduction of harvest to crush by 24 hours will result in increased revenue with little extra cost.