

PART 1: FURTHER INVESTIGATION INTO THE LOSS OF WEIGHT
DURING THE MILLING OF CANE.

I. INTRODUCTION.

In recent work carried out at the Imperial College by Smith, there was a significant loss in weight on milling cane in the laboratory and sugar factory, rendering it impossible for the equations

$$\text{Cane} = \text{Juice} + \text{Bagasse.}$$

$\text{Cane} + \text{Imbibition} = \text{Mixed Juice} + \text{Bagasse}$
to balance when all the products were weighed.

In the present method of mill control, bagasse is obtained by difference, whether the cane, imbibition and mixed juice are weighed or only the cane with estimation of water and mixed juice by volume and specific gravity. Thus it is apparent that no correction having been made in the equation for the milling loss, in the control reports the bagasse and absolute juice figures are wrong. This predicament in the control report could be rectified either by bagasse scales or by a correction factor. The first suggestion is more practicable and reliable although any bagasse scales would have to be a bulky affair. The use of a correction factor is rather doubtful, since the milling loss is influenced by a number of factors or factor so far undertermined.

In the laboratory, it was found that the following factors influenced the size of the loss, but were not responsible for the whole of it:-

1. Relative humidity of the atmosphere - Increased loss with decrease in humidity suggesting evaporation.
2. The variety of cane milled.
3. The degree of preparation prior to milling - More finely divided the material, the greater the milling loss.

In the factory when dry milling the cane, it was found that the loss on milling was again influenced by the relative

humidity of the atmosphere surrounding the mill and by the variety of the cane milled.

Due to the fact that the preparation of the cane prior to milling could not be varied in the factory, this factor was not investigated.

It was also observed that cold imbibition influenced the milling loss.

The investigation was continued with a view of finding out if possible:-

1. What portion of the milling loss was due to evaporation.
2. What other factors influenced the loss.
3. What products were lost during milling.
4. The exact influence of Cold and Hot imbibition on the loss.