Harvesting losses cannot be eliminated completely however, trials have shown that these can be reduced significantly if the harvester is set up and operated correctly. The harvesting operator has a crucial role in ensuring that the harvester is set up and operated in such a way that performance is optimised, cane quality is maximised and losses are minimised. Even under optimum operating conditions, losses associated with the extractor can be significant and contribute to the overall harvesting losses the combined value of which can be equal to the cost of harvesting. Finding the right balance between harvesting losses and the direct cost of harvesting makes everyone more money. Tools such as SCHLOT, shown to the right, ([http://calcs.schlot.com.au/](http://calcs.schlot.com.au/)) allow all sectors to make an informed decision between loss and the direct cost of harvesting.

The extractor fan is intended to clean cane with minimal losses when operated correctly. Understanding the performance and limitations of the harvester, and more specifically the trash extraction system, is critical in understanding the consequence of different trash removal strategies. At current high pour rates, higher fan speeds are more effective at extracting cane than cleaning it. Numerous trials by SRA and others have repeatedly shown that in green cane, losses readily exceed 10-15 tonnes / hectare as fan speeds get above ~900 rpm.

A large number of other factors affect cleaning efficiency and cane loss, some reducing it and some increasing it. These include manufacturer, fan type, blade configuration and fan speed. Trials undertaken with different fan types show that increasing fan speed from 830 rpm to 1030 rpm tripled cane loss and only reduced EM levels by less than two percent as outlined in the graphs below.

### Graphs

**JOHN DEERE FANSPEED VS EM AND CANELOSS**

- 7.5 t/ha increase in losses for 1.8% reduction in EM

**ANTI-VORTEX FANSPEED VS EM AND CANELOSS**

- 7.5 t/ha increase in losses for 1.85% reduction in EM

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The reason for this is that the cleaning chamber is not designed to deal with the quantity of material related to high pour rates (greater than 90 tonne/cane/hour). At these high pour rates, because of the mass of cane that the system is trying to deal with, billets of cane get sucked out with the trash, especially when speeds are increased in an effort to remove more trash.

Installing different fan hubs and blades was seen as a solution to this problem because these have the capacity to ‘pump’ more air at lower speeds. However, as is evident from the data the impact on reducing cane loss while delivering a cleaner product has been minimal.

When it comes to cane cleaning, striking the right balance is critical and there is a point above which the losses outweigh the gains.

As fan speed increases, CCS increases and cane yield reduces as cane loss increases. There is a point at which sugar per hectare is maximised and that is what operators should be targeting. Above that point the cane loss starts to outweigh the increasing CCS as shown in the chart below.

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