



Maximising industry value through optimised harvesting practices

BY BRAD PFEFFER

At MSF Sugar's Tableland Mill, the aim is that the trucks never stop.

With 24 hour harvesting and 12 trucks hauling cane to the mill, but no storage of bins at the mill, a truck needs to be at the mill about every seven minutes to ensure they are pushing through 200 tonnes of cane per hour.

Any less than that, and milling costs increase through inefficiency and they are burning valuable bagasse that would otherwise be used for electricity cogeneration.

As with all regions, this means that there is a huge logistics operation in tracking the trucks and harvesters with GPS, as well as scheduling groups in different sub-districts to keep the cane flowing.

It is a finely tuned operation that is working well, and, now, MSF Sugar is keen to keep it moving forward through harvest optimisation.

Two of the men helping to coordinate that balancing act are Allan Cross (Operations Manager – South Johnstone Farms) and Wayne Reys (Tableland Farms Harvesting Supervisor). They are part of the team that oversees harvesting contracts that cut 213,000 tonne of MSF Sugar's own cane and about 132,000 from Tableland growers.

As part of that, the pair worked with SRA on demonstration trials in 2017 to assess cane and juice loss, which was then followed with a workshop to drive positive practice change.

They have worked with SRA to optimise the feedtrains in their harvesters, and harvesting parameters such as ground speed and fan speed are now run according to recommendations. They are fitting chopper drums that reduce losses through an efficient cut. They have also modified their machinery to suit 2m row spacings that are being adopted to improve farm productivity.

An analysis of the optimisation of the feedtrain alone showed that optimised machines compared to unoptimised machines were 6.7TCH better under low loss harvester settings, and 4.6TCH better under nominal harvester settings.

"It is the research that continues to drive our decisions," said Allan Cross.

"The research has to be done in the field to prove it. Once it's been proved, we are adopting that research."

The improvements to the farming system across MSF Sugar farms are also flowing through to positive impacts for harvesting.

According to Operations Manager of Tableland Farms, Rik Maatman, the 2m rows, for example, mean that the harvester already needs to slow down by 1 to 1.5 km/hour compared to 1.8m or 1.6m row systems.

"We are currently only cutting young 2m crops as we are developing that system, so it is all good yielding cane, and that means that our guys would rarely ever go over 4km/hour," Rik said.

They also continue to make other improvements to the farming system to improve harvesting efficiency. This includes long and straight runs, wide headlands, and having bin pads close to paddocks.

"With our farming system, GPS guidance also ensures that we aren't damaging the stool and, over the long term, we hope that the gains aren't just in reducing sugar loss, but also potentially growing an extra ratoon crop," Wayne Reys said.

The MSF Sugar team said that because they grow, harvest, and mill the cane, they are in an ideal situation to make the most of any changes.

The trials showed the clear gains to be made in reducing cane and sugar loss, but also showed that this also came with increased harvesting and



freight costs due to issues such as bin weights and bins per hectare.

According to last year's trial, the grower revenue net of costs was \$4494 per hectare for the recommended treatment, which compared to \$4253/ha for the nominal treatment and \$3964/ha for the aggressive treatment.

"Our rule of thumb is that we were saving \$3 in cane and it was costing us about \$1 in freight, so obviously that is a good investment ratio. As we continue to implement harvest optimisation, the next step will be looking at improving the freight," Rik said. ■

The 2017 trial had four treatments:

TREATMENTS	FAN SPEED (RPM)	GROUND SPEED (KM/HR)	SECONDARY EXTRACTOR FAN
Low	600	3	Off
Recommended	750	4	On
Nominal (Conventional practice)	750	6	On
Aggressive	950	6	On

This table provides a snapshot of the results:

	CANE YIELD (TONNE/HA)	CCS (%)	SUGAR PRODUCTION (TONNE/HA)	BINS PER HECTARE	GROWER REVENUE PER HECTARE (AFTER MILL DEDUCTIONS)	CONTRACTOR REVENUE PER HECTARE
Low	136.5	14.2	21.5	6.8	\$6028	\$1097
Recommended	129.5	14.7	20.7	5.8	\$5813	\$1023
Nominal (Conventional practice)	122.3	14.6	19.7	6	\$5513	\$976
Aggressive	118.1	14.7	18.2	4.9	\$5125	\$900

This work is one element of a much larger project called *Enhancing the sugar industry value chain*, which is funded by the Department of Agriculture and Water Resources and SRA as part of the Rural R&D for Profit Program. A new round of demonstration trials across the industry are about to get underway for 2018.

For more information, contact: SRA Harvesting Adoption Officer, Phil Patane on ppatane@sugarresearch.com.au or (07) 4776 8202



(Over page) The crop at one of MSF Sugar's Tableland farms pictured earlier this year (February). (Top left) MSF Sugar's Allan Cross and Wayne Reys are adopting the outcomes of harvesting efficiency research. (Bottom left) Wayne Reys, Rik Maatman, and Allan Cross discuss harvesting plans for the 2018 season. (Above) MSF Sugar's Tableland Mill in operation.