

BSES Limited



**A SURVEY OF ROLLER TRAIN – CHOPPER OPTIMISATION IN THE
BURDEKIN DISTRICT**

by

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SUMMARY

This survey was designed to assess the service provided for implementing Roller-Train Chopper Optimisation (RTCO) in the Burdekin and the RTCO product itself. The survey was carried out to assess the future potential of RTCO in the Burdekin, to quantify market perceptions and to respond to negative feedback from some Burdekin industry personnel.

Soil-in-cane was the only problem identified with the RTCO product, and mill pressure on bin weights was put forward as a limiting factor on adoption. Most respondents would optimise in the future if the soil-in-cane problem were solved. Evidence from the survey suggests that soil-in-cane is related to the high butt-lifter rpm used in RTCO at the time. This issue can be resolved through further research and the payoff is likely to be high.

1.0 INTRODUCTION

This survey was designed to assess the service provided for implementing Roller-Train Chopper Optimisation (RTCO) in the Burdekin and the RTCO product itself. The survey was carried out to assess the future potential of RTCO in the Burdekin, to quantify market perceptions and to respond to negative feedback from some Burdekin industry personnel.

RTCO was promoted by BSES Limited following research using the chopper-box test rig. This research conclusively showed that chopper-box loss decreased, in the order of 4% over standard losses, by optimising the roller train. These were real gains that were available quickly and cheaply to the Australian sugar industry and were, therefore, promoted by BSES. RTCO had been tested in the field, with these results showing no increase in soil-in-cane levels.

There were 32 harvesters that requested reports in the Burdekin. Of these, 22 were surveyed. All of the RTCO reports were issued prior to the 2002 season, during the April/May period.

The majority of respondents were positive in their analysis of RTCO. All respondents stated that they had heard bad reports from other people, yet the survey results only support such comments to a limited degree. Soil-in-cane was the only problem identified with the RTCO product, and mill pressure on bin weights was put forward as a limiting factor on adoption. Most respondents would optimise in the future if the soil-in-cane problem were solved. Evidence from the survey suggests that soil-in-cane is related to the high butt-lifter rpm used in RTCO at the time. This issue can be resolved.

Cultural practices in the Burdekin aggravate the problem. When the survey respondents were asked for any additional comments, many were similar to these:

“The biggest problem in the Burdekin is the hill. In most other places it is small. We all tend to cut between 1-2 inches below ground. These are the main problems.”

“High hills are more prone to feeding in soil.”

“I went to the HBP workshop at the beginning of the season. We need to persuade growers to improve; we are expected to produce. If we are not given a fair go we are not going to get it [improvements]. Big hills are one issue that I have in my group. Growers would be better leaving it alone rather than hilling up [in ratoons]. Hill heights are ridiculous, truck diffs drag on the hills.”

Additionally, the 2002 season began after 100-200 mm of rain, which intensified the problem.

While debate exists as to whether levels of soil-in-juice increased, it is clear that harvester intake of soil rose dramatically in the Burdekin with RTCO. BSES had not previously had such problems with soil in cane in other areas. In a green-cane situation, soil is removed from the harvester by the action of the trash flowing through the machine. Harvesting in predominantly burnt-cane situations meant that the increased soil intake was building up in the harvester and not being ejected.

2.0 THE RTCO REPORT DOCUMENT

Of the 22 survey respondents, 21 requested reports and 13 of these received reports. Of the eight that did not receive reports, four were a late model Camecos (no simulation model was available at the time), two harvesters were very complex (the dual-row machine and a highly modified Austoft), and two reports were not completed.

3.0 REASONS FOR REQUESTING A REPORT

Respondents saw a range of benefits in RTCO.

“I read the BSES article I thought ‘you ripper, maybe I could get more cane in the bin.’”

Table 1 **Number of respondents citing each expected benefit**

Billet quality	3
Billet length	4
Feeding	4
Chopper losses	4
A more efficient harvester	3
Reduced fuel use	2
Grower pressure	4*

*Of the four harvesters that cited grower pressure, two could see no other advantage in RTCO.

4.0 THE COST OF RTCO

The average cost to of optimisation was \$2,100; costs ranged from no cost to \$3,800.

5.0 PROBLEMS ENCOUNTERED

All harvesters that were optimised reported increased soil-in-cane levels.

“Dirt went up dramatically.”

“A negative response from grower customers.”

Of the 13 reports that were issued, 10 machines were optimised, all according to the report. One other contractor optimised his machine, correctly, without a report. Thus, there were 11 optimised machines in the survey. Two of the three respondents that had received reports but did not optimise, citing farmer pressure for having the inspection in the first place – they did not initiate the request.

6.0 CONTRACTOR RESPONSE TO PROBLEMS ENCOUNTERED

6.1 Soil in cane

“I changed it back to how it was.”

“We [the co-op] agreed to go back to standard set-up in wet conditions to reduce dirt. There is very much a tie-up in the perception of operators who know better than anyone else - resistance to change.”

“I cut 40,000 tonnes optimised then changed back to original in 2002. I cut 35,000 tonnes in 2003 then I changed the butt-lifter to 90 rpm with remainder sped up. I could see the benefits but soil in cane still too high. Then I slowed down next two bottom rollers to half the difference [That is, the difference between the RTCO recommendation and the 90 rpm of the butt-lifter]. Then I slowed the first bottom roller to original speed. It remains a reasonably fast train with bottom group progressing in speed from butt-lifter.”

“I slowed the butt-lifter.”

“Horrific dirt with the original butt-lifter rpm. I slowed the butt-lifter and reduced the dirt levels.”

6.2 Billet length

RTCO will give a consistent and predictable billet length and any reasonable billet length can be achieved. One contractor commented that *“I could not get bin weight; bin weights went out the door. Billet length was 8 inches to 8 ½ inches consistently.”* These billet lengths are industry standard. This comment begs the question: ‘What are you cutting at now to fit your allotment into the number of bins provided? How much is this costing the industry?’

“Billet length was a lot of perception and a bit of fact. Mill attitude on billet length (short) and bin weight overrides the quality aspect.”

7.0 ARE THERE ANY POSITIVE ASPECTS OF RTCO?

“A more fuel efficient machine, a realisation amongst the crew that the owners wanted the best job possible and that we were prepared to spend money doing so. It highlighted the dirt issue to industry and the fact that Burdekin conditions had a greater impact on soil from optimisation than in other area. Optimisation coupled with the HBP Manual and workshop definitely raised awareness of the importance of the quality of cane. This tends to get overridden by desire to get bins out as fast as possible and lack of commitment by industry to follow through.”

“Never a problem with feeding, I did not have a choke all year; great in green cane.”

“Nope, no positives, none at all.”

“A very even billet length.”

8.0 WILL YOU OPTIMISE IN THE FUTURE?

The response to this question was very positive, particularly given the problems that were encountered.

“The harvester is currently unavailable due to warranty repairs; could it be assessed in February 2004 for optimisation?”

“Yes, I am quiet sure that we will, we want to be the first ones. It is a limited expense against the savings.”

The vast majority of respondents stated that they *“would be interested if there were no dirt issues”*.

It is interesting to note that the respondent who optimised independently of BSES had exactly the same problems that were encountered by BSES.

“I went off what I’d heard and got the Austoft blokes out. [The roller and chopper speeds quoted by the respondent showed that RTCO was in fact properly achieved in this case.] I got the rollers to a similar speed (5 to 7 rpm difference in speed). Butt-lifter rpm – we had a lot of trouble, it was going pretty fast.”

9.0 THE SERVICE

“I was very impressed with Matt’s presentation at Ag North, he was picked to pieces and he answered every question without hesitation. He obviously knew his stuff.”

“It made sense on paper, but when I got the report nothing added up. There was not enough testing to ensure that it was performing on a few machines prior before telling everyone that this is the way to go. I heard that the other blokes changed backed on the first day.”

“I do not have a problem with the service. At the end of the day it is an individual service, every machine is different and I can see BSES constraints. No problems with Matt, he was making an effort to improve with what we have got.”

“Matt tried to rectify the problem and then did not get back to me.”

“Matt was good to talk to and was good to get along with. Everything was hunkey dorey. Matt had to contend with a lot of shit, but he seemed to manage it.”

10.0 WOULD YOU USE BSES HARVESTING ADVICE AGAIN?

Of the 22 contractors surveyed, 21 would use BSES harvesting advice again. Only one respondent stated that he would not use BSES harvesting advice after his experience with RTCO, and one other stated that we should have consulted him before we began anything. Many comments were extremely positive.

“Yes, definitely, in capital letters and underlined.”

The majority of respondents stated that they would listen to BSES harvesting advice and make a decision based on their own circumstances.

11.0 WHY?

“BSES harvesting is well researched and capably delivered - and it works.”

“BSES is the only organisation providing information on how to improve the outputs from the harvest.”

“I was not happy with optimisation but other advice, eg good blades, good ground job, is good advice.”

12.0 RECOMMENDATIONS AND CONCLUSIONS

The primary goal of RTCO is reduced chopper-box losses. Research shows that reductions in losses of 4% are possible. Even a 1% reduction in chopper-box losses is a further \$10,000,000 across the Queensland sugar industry and \$2,600,000 to the Burdekin region (based on 29.15 Mt of cane for Queensland, 7.5 Mt of cane for the Burdekin, a sugar price of \$250/t and a CCS of 14 units.)

Soil-in-cane is clearly the primary issue preventing gains from RTCO and this issue has not yet been fully addressed. There is strong anecdotal evidence, as seen in this survey, that soil-in-cane is proportional to butt-lifter rpm. There may also be an interaction involving the first- and possibly the second-bottom roller rpm. Burdekin cultural and hill-up practices aggravate this problem. The relevance of these practices to current farming systems, where blocks are laser-levelled, must be questioned.

Further research investigating soil in cane and RTCO would have a high pay-off and a high likelihood of success.

“Soil in cane is the only problem, and it can be overcome. A lot of operators did not appreciate being told how to cut cane and that they were wrong - initial delivery and a couple of high profile knockers did not help.”