

SRDC Harvester Group Innovation Project

Final Report

SRDC project number: HGP008 -
Project title: Incentive Price Harvesting signals versus Traditional Payment System

Group name: Ripple Creek Harvesting Group

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Funding Statement: This project was conducted by Ripple Creek Harvesting in association with the Sugar Research and Development Corporation (SRDC).
SRDC invests funds for sugar R&D derived from the sugar industry and the Australian Government.



The Ripple Creek Harvesting Group is not a partner, joint venturer, employee or agent of SRDC and has no authority to legally bind SRDC, in any publication of substantive details or results of this Project.

Executive Summary:

Overview:

The summary of the *Incentive Price Harvesting signals versus Traditional Payment System* will be explained in the following way:

- *The purpose of the Project*
- *The Way the Project was carried out.*
- *Leanings from this Project*
- *Key Results on Harvesting*
- *Summary of Achievements From this Project*

The Purpose of the Project:

- ✓ Is to help farmers with the transition from the traditional way that they have paid for their cane to be harvested to an incentive pricing system that related to their farm layout and the management of the cane harvested on their farms.
- ✓ To promote the economic benefits to a farmer by offering an incentive payment system that would encourage them to improve conditions for the harvest as well as the hauling.
- ✓ To increase the awareness of the environmental benefits of how they manage their farm for harvesting. This also means a willingness to try innovative ideas that save both stakeholders money without sacrificing soil health.
- ✓ To improve the farmer/harvester relationship by making our business more transparent to the cost of harvesting. It was also allow farmers to have greater control on the cost of harvesting under an incentive pricing system.

The Way the Project was Carried out:

- ✓ The idea was to collect data from every block on every farm in our contract. This would include all the fuel and time spent, not only in the paddock but anytime we were on their property. We compiled the data in a report and gave it back to the farmers. With this data the farmer with the contractor could sit down and work out a strategy that could potentially save them both time and money. We would be also producing a report that would compare the difference in costs of harvesting between farmers for the benefit of highlighting the variance in farm conditions.

Learnings from this Project

- ✓ Better layout of farms was more efficient to harvest.
- ✓ High Tonnes /hectare contributed to efficient harvesting
- ✓ Fuel is one of the major costs in harvesting
- ✓ Incentive type formulas encouraged better harvester management by Growers.
- ✓ Highlighted the benefit of multi-row harvesting devices.
- ✓ Quality of hauling roads had a major impact on harvester paddock rates.

Key Results on Harvesting

It was calculated for the 2007 season that for the total time that the harvester engine ran:

- ✓ 51.6% of harvester engine time was spent cutting cane
- ✓ 29.6% of engine time was spent turning on headlands
- ✓ 5.6% of engine time was spent waiting for a hauling unit
- ✓ 13.3% of engine time was warming up the harvester and/or shifting from block to block

Summary of Achievements from this Project

The goals that were achieved from this harvester group project were:

- Through the development of the HELP Data Management System we could measure the following parameters:
 - Fuel used and Time spent:
 - Cutting cane.
 - Turning on Headlands.
 - Waiting for a haul unit in the paddock.
 - Shifting from paddock/farm to paddock/farm.
- All information collected was for every paddock on every farm in your contract.
- We were able to determine from the collected data which paddocks were more expensive to harvest in relation to fuel and time.
- Assist growers in suggesting to them a more economical way to harvest their crop that could potentially save money for both parties.
- By using the incentive priced formulas gave the grower every opportunity to try different ideas on their farm (e.g. joining paddocks, shortening hauling distance).

Background:

There was a need to do this project because of the uneconomical way in which growers and harvester contractors were running their businesses. This is because in the past in the Herbert River contractors could not quantify to the grower the true cost of harvesting. As a result of this we needed to investigate some sort of system for the automatic collection of data and an analytical software program that would give us the input cost of harvesting on every block of a grower's farm. As a contractor we needed to understand what our harvester was doing at any time the engine was on. It is also about how the grower and contractor could use this data produced to improve the harvester's efficiency to potentially save them both money.

Aims:

- The project seeks to achieve to help farmers with the transition from the traditional form of payment to the harvesters to a more modern form of incentive price harvesting, without the risk. The reason for this is at the moment the price of harvesting within a contract group is basically the same. Therefore there is no incentive for the farmers to improve layout of their farms or rewarded if adoption has previously been applied. It also is envisaged to give the contractors opportunities to trial different setups on a harvester to improve the quality and quantity of the product. Lastly it also to construct a payment for employees that reflect the productivity of the harvesting business.
- The economic benefits will be that for the farmer he will only pay for the conditions that he provides to the harvester in the way of paddock layout and crop/variety management. This will immediately give the farmer the incentive to improve the cutting conditions on his farm, so that in turn it will provide him with a lower cost to harvest his crop. For the harvesting contractor, with a higher paddock productivity rate it will enable him to cut a larger contract in the same amount of time, thus increasing his gross potential and reducing the percentage of fixed costs.. The harvester contractor will also be rewarded by better value for money on an hourly rate from his employees because of a higher productivity rate. With the eventual increase in contract size the contractor could afford to increase his hauling out crew as the productivity of his business increased. It will also improve the management of a traffic plan for the miller. With larger more viable groups

the mill will be able to rationalise their cane transport system to run more efficient. This should also help us achieve a smaller cut to crush time

- The environmental benefits will be a possible change in attitude in the way farmers might cut their farms. By this I mean that accepting new methods or ideas about harvesting that would reduce soil compaction, like multi-row harvesting. The adoption of land levelling to paddocks to improve the quality of water that drains off their land and at the same time increase their productivity. It would also help us achieve far better value for money per hour on the usage of diesel fossil fuel and our reliance on it.

- The social benefits will be a possible greater farmer-grower relationship. This is because growers will have a greater control of how they manage their costs in regards to harvesting. The harvester contractor will be able to make suggestions that will help both parties become more sustainable into the future. I am also hoping that the miller will be satisfied in this arrangement with a more simplified traffic system and a better quality product to process.

Methodology:

The project was initially started by Ripple Creek harvesting. They invited the growers of their group to participate in a project that would help them understand more about the cost of harvesting and the effects of pricing on their farms. As part of the project Ripple Creek Harvesting employed Anthony Girgenti from Sugarcane H-E-L-P Services to provide the structure on how the project would run. This was mainly because of the work that Anthony had done over the past 4 years on the collection of data specifically from cane harvesters.

The intention of the project was to be able to collect data from the harvester for the amount of time spent in the paddock and for the fuel used. This data would then be dissected by another software program to give the group of growers that we cut cane for an evaluation on what was happening in our harvesting operations.

The Original plan of the Project was to:

1. Collect Data from harvester

For the 2005 season the data was to be collected manually by a series of clocks set up in the cab of the harvester (fig 10)

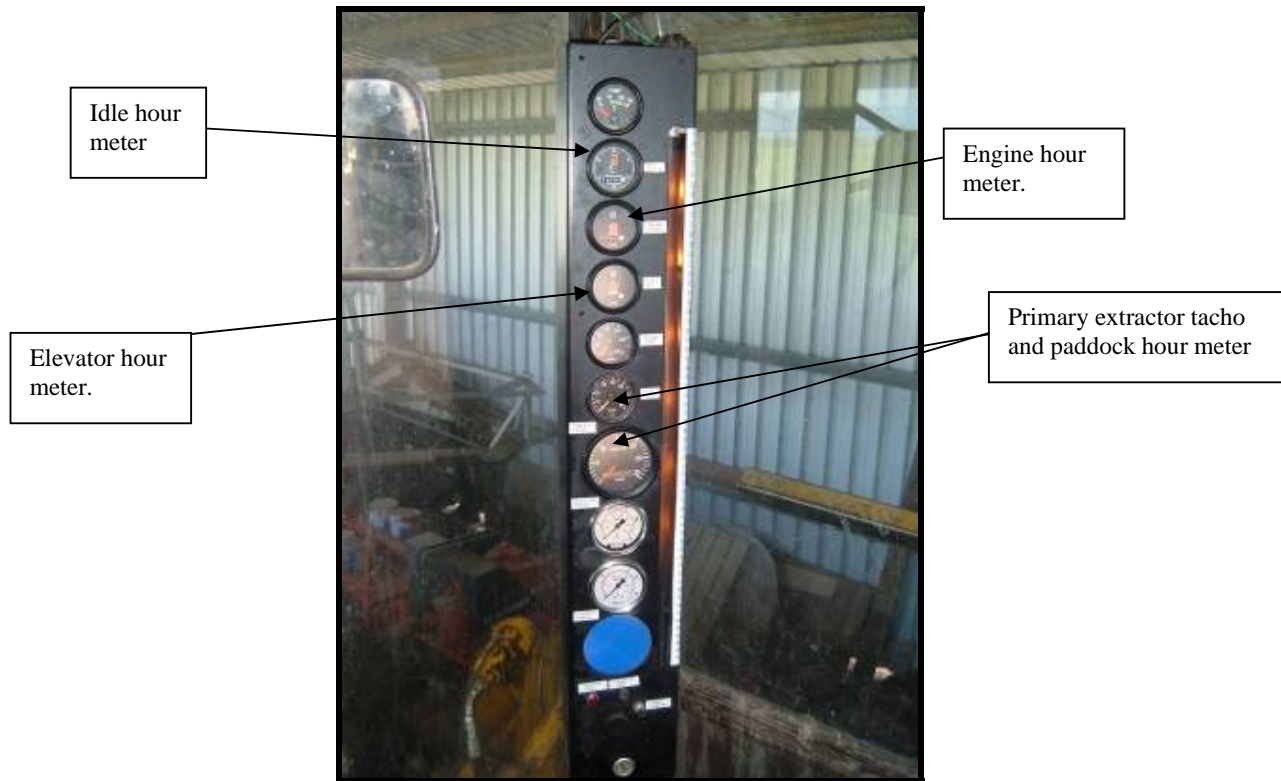


Fig 10

(Pictured above is a tower of instruments found in our harvester in 2005. This was modified to accommodate for three extra hour meters. These readings were taken every time we finished a farmer or cut for the day)

The results were recorded on a daily basis for each grower that cut that day. The harvester was filled up with fuel from a mobile fuel unit that contained a flow meter to measure the fuel. The same was done for the hauling units as well. This data was then manually entered in to a computer program where graphs could be produced for the growers in the contract.

2. Develop Field Book Form

A field book report was developed to find out the average drill length of every paddock on a growers farm. The forms contained the paddock numbers and area of every block on their farm. All the grower did was to count the number of drills in every block and record it on the sheet. It was then handed back to the Project Manager.

3. Produce Newsletters

On a 6 monthly basis a newsletter was written to update the growers on where we were up to in the project and to inform them of any minor changes that were happening. This also mentioned to them how the contractor was dealing with the issues of running the business on a farm.

4. Pricing Estimates

Sugarcane H-E-L-P Services also developed two incentive price formulas to trial against the original formula. They were:

1. *Base price to cut cane in (\$/tonne) + Fuel used per paddock.*
2. *Base price to cut cane (\$/tonne) + A Variable price (wages and fuel on an hourly rate)*

These were compared to the original formula used for many decades:

1. *Price of cane cut in (\$/tonne) only.*

These estimates were filled out with the data collected from the harvester and entered into an Adjustment note. On this adjustment note it compared the total cost value of the three formulas. The conditions of the project was if any of the incentive formulas were less than the original formula used then that grower received a rebate back of that difference. If none of the incentive formulas were found to be less than the original formula than the difference was refunded back to the contractor. This immediately gave the grower an incentive to try to optimise the conditions on his farm for the harvester.

5. Incentive Schemes

It was decided to help growers through the transition of improving their headlands for harvesting. A scheme called Headlands to Highways was developed by Ripple Creek Harvesting to subsidise growers to upgrading their main headlands or haul roads to shorten or reduce the waiting time of the harvester in the paddock. This could have meant having their headlands lasered or adding a pipe across a drain to shorten the distance to the siding. The growers were subsidised 50% of the upgrade cost up to \$250 per season.

6. Forums/Field Days

To let the industry know of what we were doing and what results were achieved, many forums were conducted and a few field Days were organised to attend. These were not only local visits but also other districts like Bundaberg Forums, Mackay Field Days and the Give Day at the Burdekin Agricultural College.



Fig 11

(The photo above was taken in February 2007. This was a meeting with Bundaberg and Isis growers and Millers to explain to them the technology involved with the HELP Data Management System. The Open day gave 50 industry people an opportunity to see how the system collected data for Redtrail Harvesting, who harvest up to 200,000 tonnes of cane in the Bundaberg area)



Fig 12

(Pictured above was an Information day held to explain the results of the first years data collected. The day was attended by the Growers in our harvesting group as well as BSES staff and Canegrowers representatives. The results were announced by the Project manager, Anthony Girgenti and the venue was at his place.)

Project Updates/Changes

There were a few fundamental changes that were made to the project as we went along were:

1. Harvester Upgrade from 1987 Toft to 2006 Cameco.
2. Analogue readings taken from timers to full electronic *H-E-L-P Data Management System*.
3. Farms that changed owners.



Fig 13

(Pictured above is a HELP Data Management system fitted to Ripple Creek Harvestings New 2006 Cameco 3510)



Fig 14

(Displayed above is a HELP Data Management System For a Cane Harvester)

Results and Outputs:

2005 SEASON RESULTS

The fundamental reason why this project was pursued was to identify the different costs involved in harvesting different farms and to investigate different pricing structures and their relationships. A pricing table was developed at the end of the 2005 season (table 1 below) which includes an original price (the same method of payment applied for many years), incentive price 1 and incentive price 2.

Pricing Table 2005

ORIGINAL PRICE	\$6.50
INCENTIVE PRICE 1	
BASE PRICE (\$/Tn)	\$5.70
FUEL PRICE (c/Lt)	0.76
INCENTIVE PRICE 2	
BASE PRICE (\$/Tn)	\$3.72
VARIABLE PRICE (\$/Hr)	\$137.80

Table 1

To determine the base price of the *Incentive price 1*, the price of fuel had to be calculated. We calculated the rebated fuel price against the average litres per tonne used for that season and subtracted this from the *Original price formula* to give us a new base price for the *Incentive price 1*. For the *Incentive price 2* formula, the Variable price was made up of wages and fuel on an hourly rate. To determine the hourly rate for wages, a program designed by Sugarcane HELP Services was used. By inputting piece workers rates for your crew as well as harvester performance figures, this gave you an hourly rate cost of wages for your contract.

2005 Grower Pricing Results

In table 2 are the results recorded for every grower in the group, comparing the original price formula with the Incentive price 1 and 2. As you can see from the results the Incentive Price 2 (Base Price + Variable price) showed a higher price than the Incentive price 1 (Base price + Fuel) or Original Price. With the Incentive Price 1 formula there were 2 growers (growers 6 & 8) that produced a more economical price for the harvester than the rest of the growers. The range of pricing for the Incentive price 1 was between \$6.47 and \$6.67. The range of pricing for the Incentive price 2 formula was between \$6.51 and \$7.22.

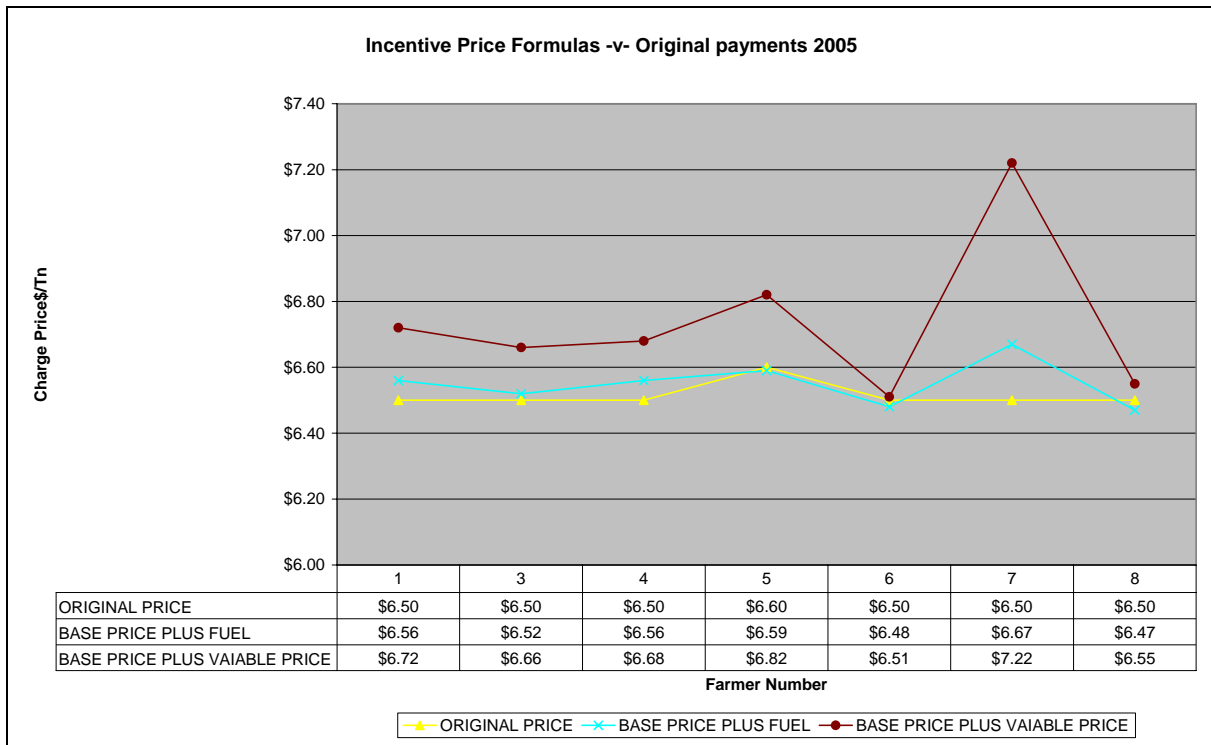


Table 2

2006 SEASON RESULTS

The Help Data Management System collected information of every paddock, on every farm of our harvesting contract. This twelve page report has been attached as an additional document. Due to the confidentiality of the information the data set has not been shown in this report.

A pricing table that was used for 2006 season was exactly the same format as 2005 but with increased values. This was due to the increase of fuel prices and wages due to the fact that the new machine used in 2006 was more productive thus the crew spent less time in the paddock for the same tonnes which equated to a higher hourly rate.

ORIGINAL PRICE	\$6.75
INCENTIVE PRICE 1	
BASE PRICE (\$/Tn)	\$5.80
FUEL PRICE (c/Lt)	\$0.82
INCENTIVE PRICE 2	
BASE PRICE (\$/Tn)	\$3.95
VARIABLE PRICE (\$/Hr)	\$134.75

2006 Grower Pricing Results

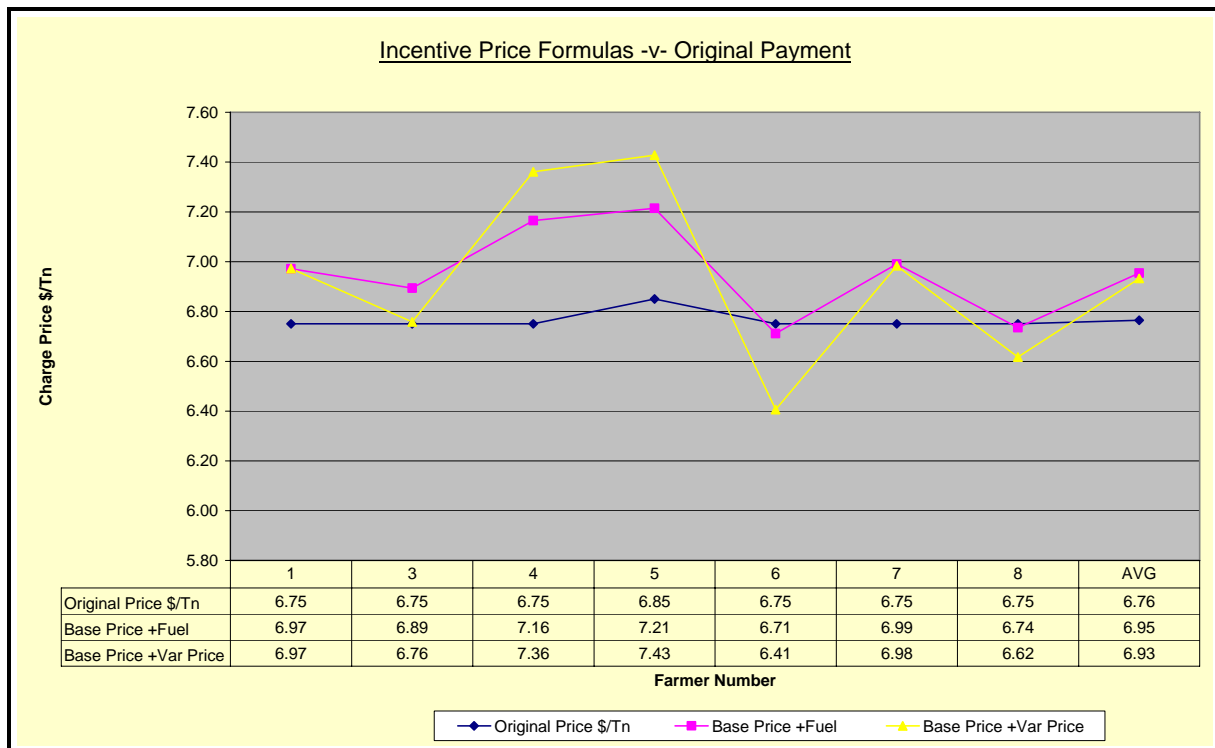


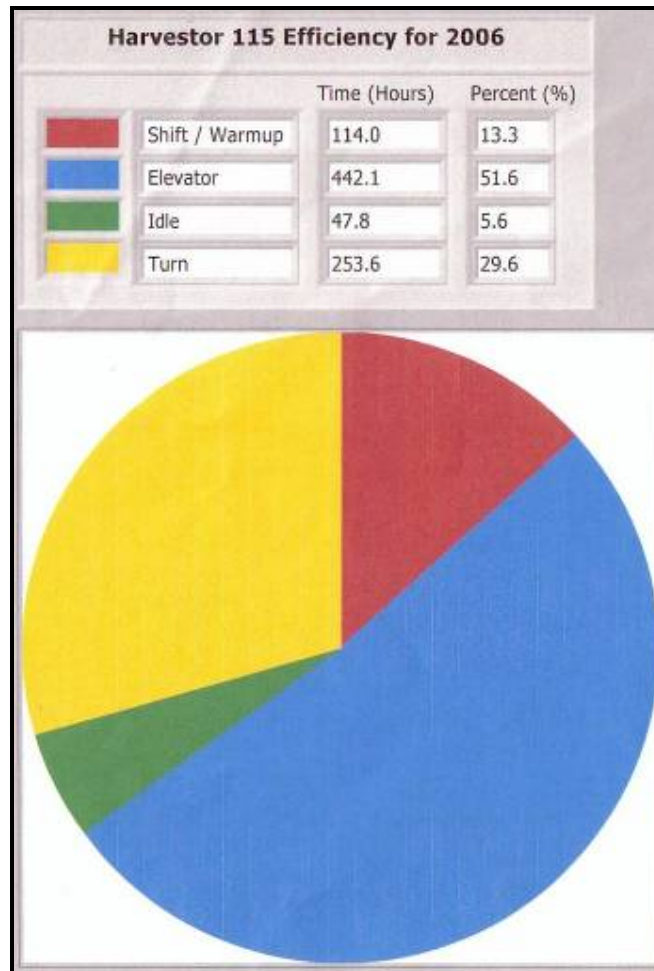
Table 3

In table 3 are the results recorded for every grower in the group, comparing the original price formula with the Incentive price 1 and 2. As you can see from the results the Base price plus Variable price showed a higher price than the Base price plus fuel or Original Price except for farm 6 and 8. With the Base price plus fuel formula the same 2 growers that produced a more economical price for the harvester than the rest of the growers. The range of pricing for the Base price plus

Fuel was between \$6.71 and \$7.21. The range of pricing for the Base price plus Variable price formula was between \$6.41 and \$7.43.

In both seasons farms 6 and 8 produced an end price lower than the original price structure which can be only attributed to both lower fuel usage and higher productivity rates. Despite all growers proximity to sidings being fairly similar in distance these figures can only be attributed to better farm layout.

Yearly Harvester Efficiencies



Graph 1

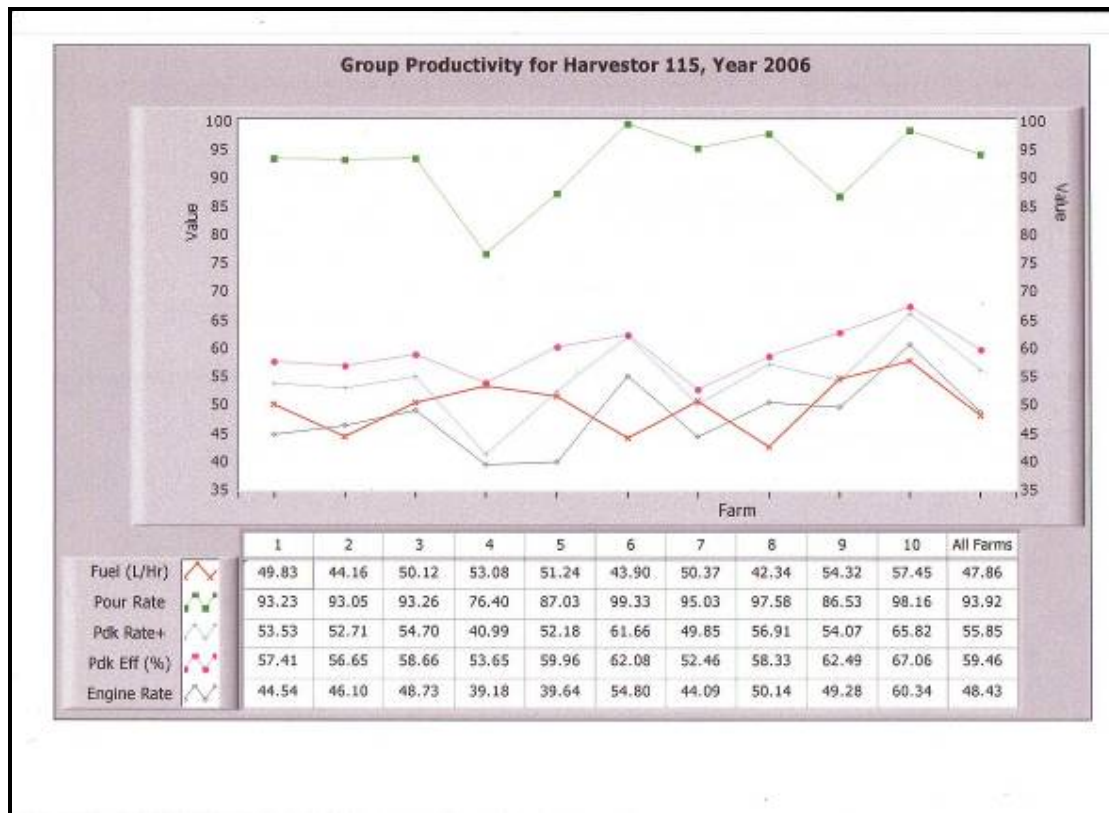
Shown above in Graph 1 is the Harvester Efficiency of our harvester in our contract. This graph shows a breakdown of time spent on various tasks. Out of the total 857.5 hours that the engine ran, only 442.1 hours was spent cutting cane (51.6% of time). The graph also shows that the harvester 253.6 hours or 29.6% of engine time just turning around on headlands. 5.6% of the time the harvester waited in the paddock for a haulout unit and 114 hours or 13.3% of the engine time was spent warming up the harvester before cutting and/or shifting from paddock to paddock between cuts. Effectively in this situation under the current traditional pricing system the harvester receives payment for the tonnes of cane it cuts. So in reality it only was paid for 51.6% of the time the harvester engine was on. In relation to published harvester efficiencies for broad acre cropping¹ ranging from 50% - 80% our harvester efficiency for this group of farms is at the bottom of the scale which would indicate that in other cropping industries this would barely be acceptable.

¹ Source: www2.dpi.qld.gov.au/fieldcrops/10907.html

Almost 30% of the time was spent turning on headlands. In the area that this contract operates a lot of the farms boundary creeks and rivers. However there are changes that can be made to optimise the set up of some of these paddocks.

Idle time is the time spent in the paddock waiting for a haul out unit. This time can be attributed to various circumstances being geographic (distance to haul) and road conditions (wet, dry, rough, and smooth). This could also allow you to look at if the closest delivery point is being used in relation to the paddock. It also asks the question that at what point is it acceptable to utilise another haul unit and the economics involved.

2006 Harvester Productivity Data



Graph 2

Graph 2 demonstrates parameters collected from the HELP Data Management System on every grower in our group during the 2006 season. It compares the difference between:

- Fuel litres per hour (rate of harvester only)
- Pour rate (flow of cane from elevator in tonnes per hour)
- Paddock rate (Tonnes of cane cut in a paddock per hour including turning on headlands and waiting for haulout unit.)
- Paddock efficiency (Percentage of time spent cutting cane compared to total time spent in paddock).
- Engine rate (The paddock rate plus warm up/shift time included in tonnes per hour).

In this information, there is the display of 10 farmers. Of this, one grower has 3 farms which were treated as separate. This gave us individual data on each farm. Farm no 10, was not part of our original group in 2006 but was cane cut out of contract due to a breakdown of another harvesting contractor. This gave us another 2500 tonnes to data log to compare with our growers. It also allowed us to compare the harvester's efficiency in another area of the Herbert River District.

From graph 2 there was a 26.3% difference in litres per hour of fuel used between farm 10 and farm 8, despite the pour rate of cane from the elevator being very similar. However the paddock rate inversely show that farm 10 had a 15.6% higher paddock rate which indicates his paddocks were better laid out. This allowed the harvester to cut cane in the paddock 8.7% more of the time, which equated to a higher fuel rate. Although the fuel rate was higher it also means that the time spent harvesting on farm 10 was lower and therefore finished earlier in the day creating a greater social benefit for the harvester crew. If the harvester contractor didn't want to capitalise on the social benefit the opportunity then arises to take on more farms increasing his contract size and viability. By understanding the benefits of well layed out farms encouraged us to formulate other incentive price payment systems to encourage other growers to improve the layout of their farms. If there was a noted difference of paddock rate of 15.6% between farmer 10 and 8, and within this harvesters contract a 33.5% difference between the most efficient paddock rate and the most inefficient (Farm 6 and 4). By aiming to achieve a 10% higher paddock rate, which wouldn't be unrealistic would allow our contract to harvest 4274 tonnes² of cane more in the same amount of time for the year. To achieve this 10% increase would require the growers to improve their farm layout as this is considered to be the main attributing factor to harvester efficiencies. Not only does this mean the redesigning of paddocks but also the way that we manage the harvesting of paddocks. By this we mean that instead of cutting adjacent blocks separate, because of traditional ways it had been done for years, rather to harvest the paddocks together by crossing either the headland or cross drains.

Questionnaires:

As part of understanding our growers, questionnaires were generated about the way the harvester logistically cut each farmer in the group. A series of questions were asked about the contract cut in the first round and one was to be filled out for the remainder of the season for both 2005 and 2006. Below are the questions asked and a summary of the feed back from the farmers.

What type of things did you like about the way the harvesting contractor cut your cane for this round?

- Blocks fully cut
- Left stubble on stool
- Cut some big crops one way to reduce stool damage
- Clean cut billets

What are some of the things you did not like about the way the harvester contractor cut your cane for this round?

- No trash cover on end of some paddocks
- Seemed to take a long time between rounds
- Use of 2 wheel drive haul-out in wet conditions

Was there any way that you could have instructed your contractor to cut your cane that would have increased his productivity for this round? (Yes/no) (How/Why)?

- No
- Cutting paddocks according to our farm management plan.
- No, because of lodged crops, wet weather and mill breakdowns.

² This was calculated by dividing the average paddock rate for the contract by the total tonnes cut for the 2006 year, then multiplying it by the new increased paddock rate.(42741/55.85*60.5-42741)

If you were charged on an incentive payment system would you have instructed your contractor to cut your farm for this round in a different way? (Example: join paddocks)

- No

If you were given the chance to reduce the increasing price of harvesting, what steps would you take on your farm to achieve this?

- Laser paddocks to turn drills around.
- Reducing the amount of times the harvester breaks into a paddock
- Better headlands.
- To reduce haul distances on part of my farm

Have you considered the *Headlands to Highways* offer by Ripple Creek Harvesting?

- Still considering
- Replacing pipes under main headland with longer ones
- Yes. Lased and widened main headland next to fallow block.
- Putting a pipe and dirt across a drain to decrease haulage turn around times.

Were there any hazards or measures imposed by you that increased the turn around time for the haul-outs back to the harvester?

- Decreasing the “v” in a drain along the edge of my paddocks
- Headlands could be better

Generally speaking the results from the questionnaire showed that the growers were happy with the way that the harvest cut the cane on their farms. Some growers who suggested changes to improve efficiencies undertook these changes but most didn't.

Upon consultation to the growers about the introduction of implementing one of the pricing schemes, the more productive farms that were economical to harvest were happy to implement the new pricing schemes. The less productive farms were intimidated about using the new pricings schemes knowing that it would cost them more to have their cane harvested compared to the traditional pricing system. Also because they do not want to pay to fix their farms to make them more efficient.

Capacity Building:

The group's capacity to conduct R & D and implement better farming systems has been enhanced by the forming of this project team between the harvester contractor and the group of growers involved. The funding sourced from SRDC was the main driver in giving this harvester grower groups the opportunity to trial different methods of incentive schemes. Another program like *Headland to Highways* was one example of how growers benefited from a subsidy to improve the quality of their main headlands to the delivery point.

Through using the HELP Data Management System and recording accurate operational cost has allowed our contract to investigate the possibility of utilising different types of multi row devices with would improve our efficiencies.

Outcomes:

The benefits that have been achieved from the project are that it has made the farmers more aware of how their farms influence the efficiency of the harvester. It has made them realise that a good farm layout and quality of headlands can have a big impact on the cost of harvesting their farms. Because of this the Headlands to Highways program was introduced last year in 2006. This allowed growers to apply for a subsidy to improve the haul ways from the paddock to the delivery points we believed that the Headlands to Highways project may spark the incentive needed to improve the quality of haul roads to the delivery site. At this stage the uptake has been quite slow.

To achieve the full benefit from this project we believe a few conditions must change. Some of these are:

- To agree to an Incentive price formula
- Accept the use of a multi row devise where applicable
- Improve the quality of headlands to delivery points
- Improve farm layout

On a whole the impact this project had on the grower group in comparison to the predicted expected benefits were achieved being economic, (harvester efficiencies identified which relate to profitability), environmental (understanding cost drivers to identify improvements) and social (improved grower harvester relationships).

Environmental Impact:

Environmental impacts to come out of conducting the project in 2005 and 2006 were the management of harvesting a group of farmers in wet weather. With wet weather harvesting, stool damage and stress can occur, causing a loss of production the following year. However implementing a different pricing formula in a wet cutting season would be extremely hard due to the increase costs (fuel and labour) under current equity system (percentage rounds). The loss in sugar and cane quality through harvesting can also have an adverse affect on the profitability and sustainability on farming. There was also great inconsistency in the quality of information communicated from the farmers to the equity group spokesman. By this I mean that some farmers did not want to cut any cane on their farms earlier in the season. So as a way of keeping the harvester cutting on a daily basis and potentially implementing this system, we offered all the farmers who cut when it was wet, an incentive to finish earlier within the group.

Communication and Adoption of Outputs:

One of the main messages coming from this project is that it has involved the farmers in more discussions about their farm layout for Harvesting. It has made them realize that the new system puts the responsibility of the cost of harvesting back on to them. As a harvester operator we have realized that we also need to look for ways to contain our costs for the future. Some of those ways is in our labour force competing with other industries and also in economies of scales.

We have communicated our project in a number of ways:

- Since inception our local HBP committee has been interested in our findings. The members of the group consist of CSR (Miller), Canegrowers Reps, Harvester Association Reps, BSES, Productivity board, State Development Officer, Sugar Executive Officer (SEO) and Local growers and Harvester Contractors. A report will also be presented to them.
- Promoted this project at the ABC GIVE Expo held at the Clare Burdekin College on the 13th of February, 2006.
- I gave a speech at the Next Generation forum at the South bank Convention Centre. There were many important stakeholders in the industry at the forum, including Canegrowers, QSL, Harvester represent as well as Research and Development organisations like BSES and SRDC. This was held over 3 days from the 15th -17th of February, 2006.
- Another form of communication to the industry was in the form of a Harvester Expo in the Herbert River and Tully Areas on the 6th and 7th of March, 2006. This Expo was organised by the Harvester Association and Harvester Best Practice Committees.
- A 2 day trip to Bundaberg on the 26th and the 27th of April, 2006 It is here where another Harvesting company was given the full story on the results to come out of the first year of the project. This involved the Members of Redtrail Harvesting Company and members of FutureCane.
- 28th of April, 2006 I spoke to a forum of harvester contractors from the Isis area including Isis Mill. The response was very positive.
- 4th and 5th of May, 2006 I rented a site at the Mackay BSES field Day. I would have spoken to at least 100 people interested in the results obtained from this project.
- 16th and 17th of April, 2006 I had a site at the Townsville Field Day. There again I had a great response from the industry.
- A field day in Bundaberg on the 9th February, 2007. This involved an invitation to Childers, Isis and Bundaberg contractors. This was advertised through their local Canegrowers organisation, Mechanical Cane Harvesters Association and a segment on the local ABC Radio Station.. A PowerPoint presentation was be developed to show the results of Redtrail Harvesting Company's data collected from their two machines. In the presentation I also gave my interpretation of their results as well as my own contract and the issues involved with using the Sugarcane H-E-L-P System
- 18th of April 2007 .SRDC Herbert Regional workshop. Presentation attached on CD.
- A meeting for the farmers in our group to display the results and to adopt some new measures for the coming season.
- Presentations were made to our local Canegrowers Organisation. in February 2007

SRDC was acknowledged at all communication events.

Recommendations:

The recommendations that this harvester grower group would make as a result of this project is:

- That a larger sample like a group of 6-10 contracts spread within the Herbert River District participate in a benchmarking project similar to this one.
- The utilisation of data collected from the HELP Data Management System be utilised more throughout the industry to account for costs of ownership.
- A similar format of the project is used by other harvester grower groups in other districts.
- Continue with investigating other ways to reduce the cost of harvesting while maintaining profitability and sustainability for all.

Publications:

Listed below are articles, newsletters and other publications about the project on disc supplied:

- Queensland Country Life, page 18, Thursday, 8th February, 2007 story by Bill Kerr
- North Queensland Register, page 23, Thursday, 19th April, 2007
- North Queensland Register, page 22, Thursday, 19th April, 2007 feature article BSES Ingham Field Day
- The Caneharvester Magazine, page 14-15, December 2005/January 2006 Issue
- 3 Project newsletters written
- ABC Local Radio report by Scott Lamond on audio CD attached