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INDOOROPILLY, AUSTRALIA**

**FINAL REPORT – BSS 247
IMPLEMENTATION OF THE
ROCKY POINT STRATEGIC PLAN AS
A MODEL FOR LOCAL AREA
INDUSTRY DEVELOPMENT
by
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SD02010**

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SUMMARY

The Rocky Point Strategic Plan was initiated as a direct result of concern from both growers and the sugar mill about the future viability of the local industry. The aim was to follow a similar procedure to the Maryborough cane industry with the vision of duplicating their success story.

At the same time as the Strategic Plan was evolving the Gold Coast City Council (GCCC) was developing a Reclaimed Water Scheme (part of the Northern Wastewater Strategy) involving the use of this water for irrigation of cane at Rocky Point.

In January 2000 I was employed by the BSES as a Development Officer and Northern Wastewater Reuse Coordinator under a jointly funded 3 year project by SRDC and GCCC to assist with the Strategic Plan and provide liaison between the GCCC and the cane industry.

A work plan was produced with specific goals and activities. Priority was allocated to work activities that were expected to have the greatest impact on achieving the goal of reaching the annual cane production of 550,000 tonnes. High Density Planting (HDP), Irrigation and Lateral Expansion were seen as the major drivers for achieving this goal.

A change in row spacing from single to quad rows (HDP) has been identified in local trials as the best opportunity for growers to lift productivity. For example, quad row Q138 plant cane yield at the Skopp site was 140 tc/ha compared to 90 tc/ha for the conventional single rows. It is also worth noting that there was a positive response in favour of the quad rows with all HDP trials at Rocky Point, with all varieties (Q138, Q141, Q124). However because of the cloud over the future of quad rows, the short-term solution to increasing production by changing row spacing appears to be with convincing growers to adopt the dual row system, and trial work was initiated to promote this change. The impact of this on production predictions is enormous. Quad rows were expected to provide a 40% increase in productivity compared to 15% for dual rows.

Lateral expansion through growing cane at Beaudesert was identified as a potential source of increased cane supply. A nursery of cane plants has been established at Beaudesert and was expected to grow to 30,000 by 2003. However the current low cane price has produced a negative impact on this initiative. Unless there is a positive upward movement in the cane price in the near future, the cane production from the Beaudesert area will remain insignificant (<3,000 t).

Irrigation of cane using water from the GCCC Reclaimed Water Scheme is expected to commence in August 2004. There was an excellent response from growers to the expressions of interest for allocation of reclaimed water for irrigation of cane. The area of irrigation from Stage 1A of the scheme will be 340 ha and involve six farmers. In general, cane farmers at Rocky Point have limited experience with irrigation. An effort was made to educate Rocky Point cane farmers on irrigation with the aim of establishing a good knowledge of Best Practice Irrigation before the commencement of irrigation in the district using reclaimed water. Also, the surface irrigation trial conducted this season has provided valuable information on crop response to irrigation and irrigation scheduling.

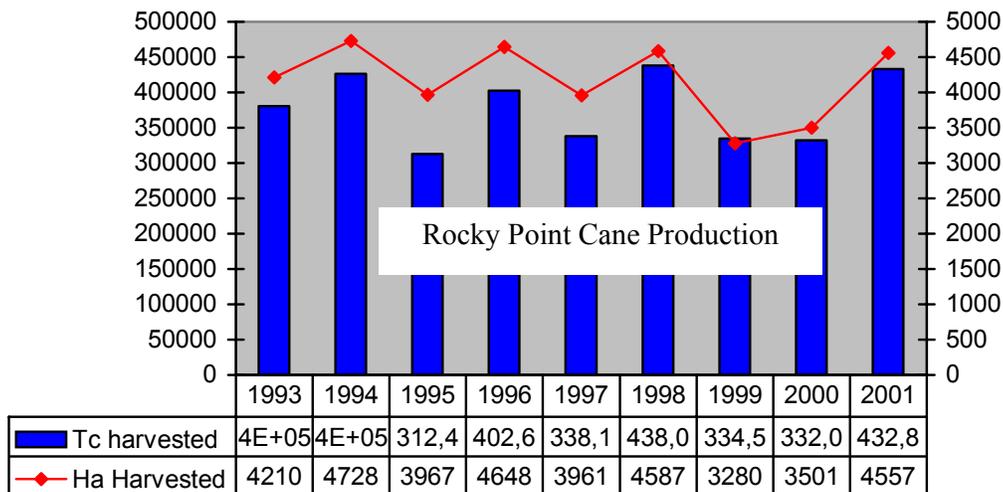
Other activities to encourage growers to increase production were based on general extension of the Best Management Practice principles endorsed by the BSES. Improved weed control management would top the list of activities that was expected to have the most impact.

THE STRATEGIC PLAN

Rocky Point cane farmers and the Heck Group (Rocky Point Sugar Mill) came together and formed a Rocky Point Industry Task Force and later developed the Rocky Point Sugar Industry Strategic Plan in January 1999. The common factor for both parties was to build an economically and ecologically sustainable cane industry.

For existing Rocky Point cane farmers, the Strategic Plan accepts that survival calls for increased productivity. Their continued viability depends on the mill having an increased supply of cane. The initiative by the Heck Group in improving its own performance, notably the construction of a cogeneration plant, has provided an opportunity for efficiency improvements at the sugar mill to handle the increased cane production without an adverse effect on the existing system.

The annual cane production at Rocky Point has a pattern of high production followed by low production with an average of 370,000 tonnes and a range from 313-438,000 tc. The industry needs an annual cane supply of over 550,000 tonnes to be viable. The long-term goal is 650,000 tonnes.



Macarthur Agribusiness was employed by the Rocky Point sugar industry to assist with the Strategic Plan. Please refer to the paper on “Strategic Planning in the Australian Sugar Industry” ASSCT Mackay Conference, 2001. The aim was to follow a similar procedure to the Maryborough cane industry with the vision of duplicating their success story. Three portfolio groups were set up to drive the Strategic Plan – Productivity, Irrigation and Harvesting/Transport.

1.0 OBJECTIVES

Assist with and/or facilitate the completion of the Rocky Point Strategic Plan.

Implement aspects of the strategic plan as identified by the Rocky Point Strategic Plan Steering Committee (RPSPSC).

Provide liaison and consultation between the industry and the Gold Coast City Council (GCCC) to facilitate the implementation of the reclaimed (effluent) reuse component of the Council's Northern Wastewater Strategy.

2.0 METHOD

2.1 Development of a Work Plan – Milestone Report 1

Following my appointment in January 2000, I held discussions with all stakeholders at Rocky Point regarding the major issues for the Rocky Point cane industry and their expectations of my activities over the term of my contract. I then developed a work plan containing specific goals and activities. This plan was presented to the Rocky Point Strategic Plan Steering Committee (G McMahon – BSES, P Kaddatz – CANEGROWERS and D Huth – CPPB) and B Lawrence (GCCC). There was consensus on the content and timetable of the work plan by all of the above stakeholders.

Priority was allocated to work activities that were expected to have the greatest impact on achieving the goal of reaching the annual cane production of 550,000 tonnes. High Density Planting, Irrigation and Lateral Expansion were seen as the major drivers for achieving this goal.

2.2 Updated Work Plan 2001 – Milestone Report 5

A revised version of the work plan was made as part of Milestone Report 5 in February 2001.

2.3 Reporting

- For the first 12 months I produced a monthly report on my activities to the Steering Committee. This was later changed to a quarterly report.
- I maintained regular contact by phone and visits with all stakeholders.
- I also provided verbal updates to the GCCC Project Team at their weekly Monday morning meetings at the Beenleigh WRF.

2.4 Milestone reports

Six milestone reports were completed on time, as requested.

3.0 RESULTS – PRODUCTIVITY ISSUES

3.1 Lateral expansion

A major goal of the Rocky Point Strategic Plan was to achieve an economically and sustainable cane production of at least 550,000 tonnes per annum. Lateral expansion of cane growing was expected to make a significant contribution to this goal. In 1998 Macarthur Consulting indicated the activity of bringing new areas into production would result in a production gain of 50,000 tonnes.

3.1.1 Beaudesert

The Beaudesert region was identified as the logical area to encourage the development of a cane industry because of the close proximity to the sugar mill (40km), rich black clay soil and access to irrigation. Expansion into the Beaudesert area commenced in 1998 with the planting of 4 ha (10 acres) at Mondoolun (Mr M Fraser). However the low cane price coupled with the high cost of cartage caused a stagnation of this expansion.

In 2001, the drop in the price of milk combined with the relative good returns for sugar provided an incentive for a further look at the Beaudesert area. In cooperation with the Beaudesert Shire Council's Office of Economic Development (Stephen Jones), media releases were placed in local newspapers (Beaudesert Times and Beaudesert Shire News & Views) explaining the situation and asking for expressions of interest in cane growing.

Approximately 300 ha of land that is leased to two dairy farmers from the DNR (Glendower Dam Site) was established as the most promising for the commencement of a cane industry. We convinced the farmers who currently lease the land from the DNR to plant a small parcel of land to cane in spring 2001 and to use this crop as a plant source for further expansion. The DNR also agreed to extend the expiry time on the lease to 2007. With assistance from the Heck Group, 25 ha of cane was planted at Beaudesert in late November/early December 2001. Unfortunately the late planting combined with the drought (and associated restrictions on irrigation) resulted in very poor crop establishment. Mr Fraser, the initial cane farmer in 1998, also planted 20 ha of cane at the same time, with success.

Recent restrictions on irrigation combined with the very low cane price have produced a negative impact on the expansion of the cane industry into the Beaudesert area. We were predicting a 30,000 t crop from the Beaudesert area for the 2003 harvest. Unless there is a positive upward movement in the cane price in the near future, the cane production from the Beaudesert area will remain insignificant (<3,000 t).

3.1.2 Gatton

Approximately 0.7 ha of cane was planted in March 2000 at Gatton College. Crop establishment was patchy, however cane growth was good. This crop was used as planting material for the 2001 spring planting of a further 8 ha. The Gatton College plan is for a 40 ha crop established at the college by 2003, harvested annually. Irrigation of the crop will be achieved using Reclaimed Water from the town of Gatton.

3.2 Irrigation

Irrigation of sugar cane at Rocky Point from the GCCC Reclaimed Water Scheme is a major part of the Strategic Plan. Benefits to the industry include a more consistent supply of cane to the mill, increased farm profitability, improved establishment of plant cane, and an expansion of the range of suitable varieties for the region.



Irrigation of cane using reclaimed water from Stage 1A of the GCCC Reclaimed Water Scheme was initially expected in December 2001. Unfortunately due to disputes relating to the Environmental Impact Studies and the location of the Alberton storage facility, the expected commencement date for using this water for cane irrigation is now August 2004.

The original area set for irrigation from Stage 1A of the scheme was 600 ha. Following recent consultation between the GCCC and the Rocky Point Irrigation Portfolio Group, this has now been altered to 400 ha. The smaller area of irrigated land will ensure a greater reliability of supply during peak crop demand periods.

3.2.1 Productivity increase from irrigation

The figures in the table below give an optimistic estimate of the increased cane production that can be expected from irrigation at Rocky Point. In an average season the irrigation requirement will be 3 ML/ha and the yield response is expected to be 7 tc/ML (Reference: Northern Wastewater Strategy – “Draft Irrigation Management Plan”)

Estimated production increase from irrigation

Harvest Year	Area Irrigated Ha	Yield Gain Tc/ha	Total Production Increase
2005	400 ha	20 tc/ha	8,000 tc
2008	<600 ha	20 tc/ha	<12,000 tc
2015	>2,000 ha	20 tc/ha	>40,000 tc

3.2.2 Surface furrow irrigation trial

A surface furrow irrigation trial was initiated in September 2001. Aims of the trial were as follows:

- To measure crop response to surface furrow irrigation of sugar cane at Rocky Point under conditions as close as possible to the water allocation and farm management conditions expected to be imposed by the Gold Coast City Council's Reclaimed Water Scheme ie, 3 ML/ha water allocation during the peak demand period of December to March and 30 L/sec output volume per allocated farm hydrant.
- To generate data on surface furrow irrigation for use in the Sirmod model.
- To identify issues of importance for Best Management Practice (BMP) irrigation at Rocky Point.

Summary - irrigation trial results: The surface furrow irrigation trial at Rocky Point has provided valuable information on crop response and irrigation scheduling. It was a good year to conduct an irrigation trial – rainfall at Rocky Point from December to March this year was 288 mm, half the average long-term rainfall (602 mm). The trial will be harvested in August however early yield estimates indicate a response of 9 tc/ML of irrigation. Another interesting finding of the trial was the valuable contribution of the water table to crop growth during dry periods.

A full trial report will be produced after the harvest in August. Interim details of this trial as follows:

Crop agronomy

Site Location	"Mango Farm", Rocky Point
Cooperator	Barry Brooking, Farm Manager - Heck Group
*Soil Type	Light/medium clay, pH 4.7, CEC 20, OC 2.7%, EC 0.29 dS/m
Variety	Q155
Row spacing	1.5 m
Crop Age	1 st Ratoon
Crop History	Planted Spring 2000 Plant cane yield: 100 t/ha
Harvesting	Plant cane crop was harvested green on 18 th July
Tillage	Green cane trash blanket, minimum tillage – fertilizer application was the only soil disturbance
Fertilizer	160Kg N/ha, applied as a stool split treatment on 24 th September 2001
Herbicide	Paraquat – directed inter-row spray, Jan 2002

Irrigation

Irrigation Method	Surface furrow (flood) Alternate furrow
Irrigation Equipment	Bartlett Fluming and outlets (14 outlets) Outlet volume – refer to table below Water meter
Water Source	Farm dam, EC 0.9 dS/m
Furrow Shape	U- shape: 20 cm depth, 65 cm bottom width, 115 cm top width, 85 cm middle width
Irrigation Area	Irrigated area 9030m ² – 28 rows wide, average row length 200 m, range 170-230 Dryland area 267 m ² – 20 rows, varying length (20-165 m)
Scheduling Equipment	Rain gauge, BSES Minipan - evaporation, 2 m ruler – cane stalk growth, Tensiometers, Enviroscan probes – 50 m from outlet end of block

Irrigation timing and quantities

Irrigation Number	Date	Outlet Volume L/sec	Time to cutoff (Minutes)	Meter Reading Start/Finish	Total Water Used ML	Water Used ML/ha
1 #	13+14 Sept	1.9-2.0 Variable	Variable	19/62	0.43	0.47
2	17 Oct	2.4	95	62/80	0.18	0.2
3	9 Jan 02	1.9	270	Malfunction		0.44
4	21Jan	1.9	260	117/156	0.39	0.43
5	30 Jan	1.9	240	156/193	0.37	0.41
6	13 Feb	1.9	210	194/227	0.33	0.36
7	22 Feb	1.9	240	227/263	0.36	0.4
8	12 March	1.9	270	263/303	0.4	0.44
9	20 March	1.9	240	303/337	0.34	0.37
10	26 April	1.9	240	337/372	0.35	0.38
Total						3.9 ML/ha

First irrigation: Outlets 1-7 were operated on 13 Sept and outlets 8-14 were operated on 14 Sept.

Advance times (outlet 4)

Irrigation number	Date	Outlet volume L/sec	Advance time (minutes) for outlet number 4			
			50 m	100 m	150 m	200 m
2	17 Oct	2.4	20	40	70	90
3	9 Jan 02	1.9	40	100	190	
4	21Jan	1.9	30	70	155	260
5	30 Jan	1.9	25	60	130	220
6	13 Feb	1.9	20	50	105	200
7	22 Feb	1.9	20	65	139	220
8	12 March	1.9			150	240

Variability in advance times between outlets - irrigation number 5

Outlet number	Outlet volume L/sec	Advance times (minutes)			
		50 m	100 m	150 m	200 m
3	1.92	25	60	120	195
4	1.92	25	60	130	220
5	1.89	30	80	185	(175 m at 240mins)
10	1.8	27	75	135	220

Calibration of minipan/tensiometers

Date	Days after irrigation	Pan reading mm	Average tensiometer reading	Stalk growth rate
10 th Jan	1	8	4	1.35
11	2	16	5	1.75
15	6	49	39	2.1
16	7	56	56	1.55
18	9	60	60 (32-88)	1.1
21 st Jan	0	Fill		1.13
23	2	12	4	1.43
24	3	19	10	2.15
25	4	30	18	1.45
29	8	65	63	1.11
30	9	75	69 (50-88)	1
12 th Feb	0	Fill		1.2
14	2	15	6	1.6
15	3	23	8	1.9
18	6	45	47	1.2
19	7	52	58	1.4
21	9	61	66(44-88)	0.9

Early crop response to irrigation – shoot counts/10m row

Date	13 th Sept 2001	27 th Sept 2001	12 th Oct 2001	17 th Nov 2001
Days after irrigation	0 (Harvest date 18 July)	14	29	65
Crop growth stage	3 Leaf	5 Leaf	8 Leaf	20cmTVD
Assessment method	Shoot Count/10m	Shoot Count/10m	Shoot Count/10m	Shoot Count/10m
Treatment				
1. Dryland	28.92	45.07	77.47	94.5
2. Irrigated	25.04	52.64	95.2	131.33

Yield estimate 22 May 2002

		Dryland	Irrigated
Stalk	Count/10m row	141	158
	Average weight Kg	1.017	1.25
	Average height cm	192	220
Tonnes cane/ha		95.59	131.67
CCS (Lab-2)		9.1	11.4
Tonnes sugar/ha		8.7	15

3.2.3 Communication/education on irrigation

In general, cane farmers at Rocky Point have limited experience with irrigation. An effort has been made to educate Rocky Point cane farmers on irrigation with the aim of establishing a good knowledge of Best Practice Irrigation before the commencement of irrigation in the district using the reclaimed water.

A group 17 Rocky Point cane farmers interested in irrigation attended a bus trip to the Childers/Maryborough district on 14-15th March 2001 to see different methods of irrigation. The Rural Water Use Efficiency Management Group Committee funded the trip.

Rocky Point cane farmers also inspected the Mango Farm Trickle Irrigation trial site as part of the BSES tour of Rocky Point on 3 April 2001. There was a clear visual response to irrigation at this time and this was helpful to demonstrate the benefits of irrigation for Rocky Point.

A farmer education meeting on irrigation was held at Rocky Point on 15th March. The meeting was well attended. The program included theory on irrigation (J Willcox – RWUE, Childers) followed by a visit to the surface furrow irrigation trial and inspection of the Heck Group low-pressure overhead boom irrigator.

3.3 High density planting (HDP)

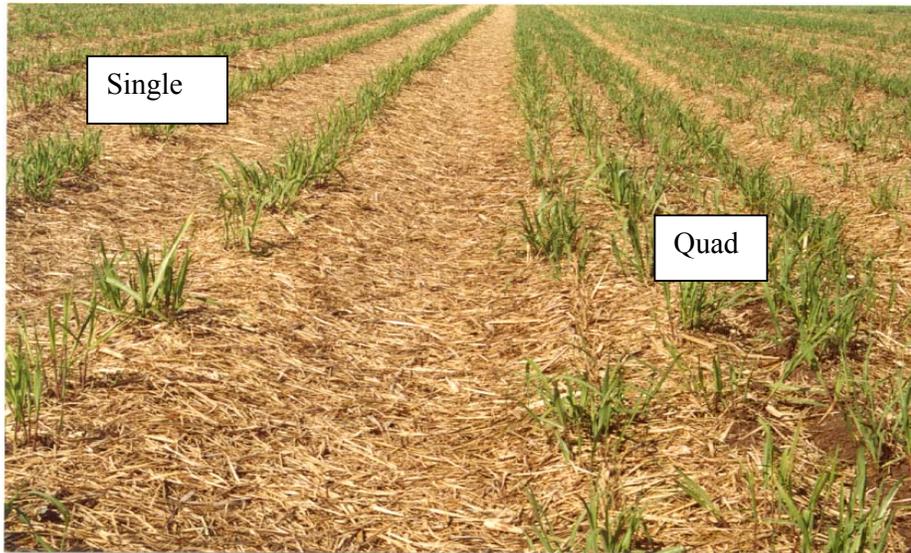
Trials with HDP, quad rows, were placed on the high priority list of my work plan because a change to this farming system appears to be one of the best methods for vertical expansion. The extra productivity would benefit individual growers by higher profit per farming unit and benefit the industry by fulfilling the need for increased cane throughput for the Mill to remain viable. A prediction of 25% adoption rate with an associated 40% yield increase gives an estimated 40,000 tc production increase from HDP quad rows by 2007. It is easy to see why this project is important to the Rocky Point cane industry.

HDP refers to any increase in planting density over standard rows as follows:

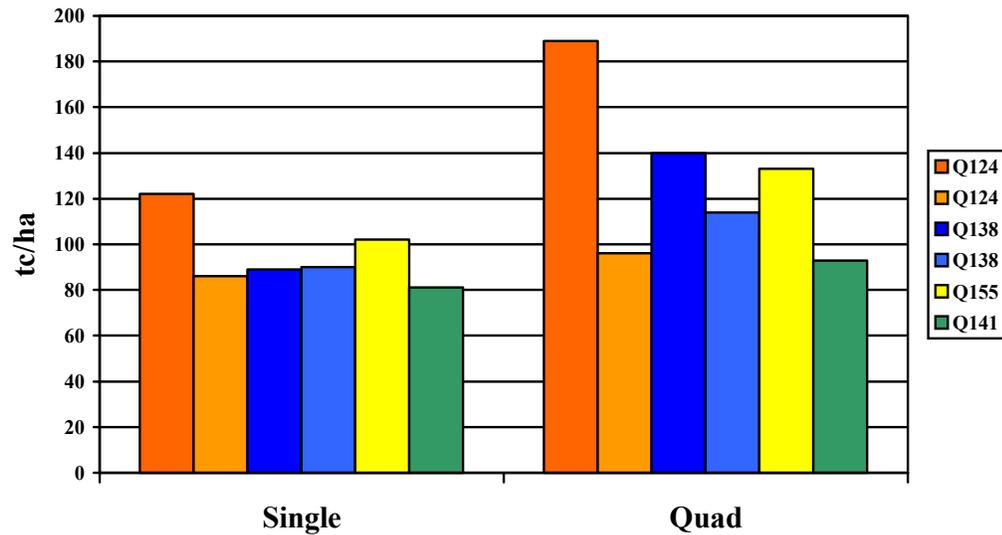
- Single Rows = single rows 1.5 m between centres
- Dual Rows = pairs of rows 0.5 m apart with 1.8 m between centres
- Triple Rows = three rows 0.5m apart on beds with 2 m between centres
- Quad Rows = four rows 0.5 m apart on beds with 2.1 m between centres

BSES trials (T Bull, ASSCT Mackay 2000) show the change from single rows to dual rows has the potential to increase yields by 20% and a further progression of HDP to quad rows has the potential for a 50% yield increase over the standard single rows.

3.3.1 Rocky Point HDP site replicated strip trial (Keith site)



HDP RESULTS – ROCKY POINT



3.3.2 HDP trials at Rocky Point

HDP trials were first conducted at Rocky Point in 1998 (Heck, Norwell site). This trial was harvested using conventional equipment and although the results were positive for quad rows in the plant crop the damage from the harvesting procedure resulted in no response to HDP in the ratoon crop.

Summary of Results 1998 - Heck (Norwell site)

Treatment		CCS	Cane Harvested tc/ha
Q124	Single	12.9	122
	Dual	12.27	121
	Quad	13.03	189
Q155	Single	12.63	102
	Dual	12.48	111
	Quad	13.06	133

A 2 ha block of Q138 was planted to quad rows (Heck, Behm's site) in 1999. Crop establishment was patchy due to very wet conditions after planting (11 inches rainfall). Unfortunately there was no comparison with either single or dual rows, however cane yields have been average for the 18 month old plant crop (160 tc/ha) and above average for the 1st ratoon crop (140 tc/ha).

A HDP Site Replicated Strip Trial (Keith site) was planted in September 2000 and harvested September 2001. Crop establishment in the HDP treatments was lower than optimum due to dry conditions before and after planting. However the yield results from the plant crop were very encouraging with a good yield response to quad rows with all three varieties. The results indicate the yield increase in the quad rows compared to the single rows was due to the higher shoot and stalk count in the quad rows.

Summary of results, site replicated strip trial – Keith

Treatment		Shoot Count/ha		Stalk			tc/ha	CCS	ts/ha
		Crop 3 leaf	Crop Till.	Count /ha	Height Cm	Weight Kg			
Q138	Quad	35079	63492	98095	182	1.18	114	15.1	17.2
	Single	17889	38401	74164	191	1.16	90	14.6	13.1
Q124	Quad	16984	32857	87302	190	1.12	96	16	15.5
	Single	11667	19975	69719	193	1.15	86	16.5	14.2
Q141	Quad	18571	31746	91587	105	0.8	93	16.2	15.1
	Single	10722	25287	81830	118	0.9	81	15.9	12.8

Results from a large area demonstration trial comparing single row and quad rows and two cane varieties at Skopp's farm produced an outstanding response to HDP. The response with Q138 appears to be directly linked to the shoot count when the crop was at the tillering growth stage. Advice from BSES plant breeders has indicated that Q155 is a late tillering variety and the large yield in the quad rows may be explained by this characteristic.

Summary of results – demonstration trial, D & R Skopp

Treatment		Shoot Count/ha		Tc/ha
		Crop 3 leaf	Crop tillering	
Q138	Quad	40,536	133,730	140.5
	Single	32,166	86,580	88.7
Q155	Quad	38,308	67,999	143.5
	Single	74,999	150,960	128.4

Because of the positive yield response, all HDP quad row sites have been fertilised and pre-emergent herbicide applied with the expectation that the trials will continue into the future.

3.3.3 Adoption and grower acceptance/attitude to HDP quad rows

The adoption of quad rows and thus the impact of this on cane production will be slower than anticipated and may not happen at all. The uncertainty regarding funding for this project (more trials and development of a billet planter) is the main concern.

The establishment of HDP quad row trials at Rocky Point has generated a lot of discussion from growers about the current row spacing and possible changes to the system. The growers who kindly agreed to allow the HDP trials on their farm would be classified as representative of the “larger grower” and would be expected to have the ability to become the innovators for the new farming system.

3.3.4 Comments from grower cooperators

Heck Group – “A change to HDP triple rows would occur if a commercial billet planter was available. The wet harvesting conditions that occur in the southern regions puts doubt in the minds of most growers about the quad rows. Adoption of the triple rows is a compromise ie, acceptance of some yield sacrifice for a practical solution.

R&D Skopp – “The HDP quad row system looks promising. More runs on the board are required before a change is implemented. Further trials need to be conducted.”

Keith – “Bailing of hay has become an important part of the farming operation and this aspect of HDP quad rows needs to be addressed”

3.3.5 Dual rows

Several growers have made a commitment to the dual row system (largely for reasons and benefits other than yield gain) and are steadily converting their farms. Assuming a yield gain of 15% and an adoption rate of 25% the prediction is an increased production from dual rows of 15,000 tc by 2004 (5,000/year gradual increase).

Planting of dual rows commenced as a commercial enterprise at Rocky Point on the Eggert Brothers farm in 1977. Their thoughts on the system are summarized in the following comments – “We have been operating a commercial cane farm of 145 ha under

this system for over 20 years, three of those years with single row, and we see no reason to ever plant single row again. The cost to change to this new system was minimal as existing machinery was converted to suit dual row in our workshop and has easily paid for itself due to the reduction in crop and soil damage leading to improved viability and sustainability.” The success of their system combined with promotion from the BSES encouraged other growers at Rocky Point to experiment with dual rows in recent years.

There is debate within the farmers at Rocky Point regarding the yield expectations and other benefits from dual row system. A large area replicated strip trial comparison between the two systems and two varieties (Q188^A, Q184^A) was planted in October (J Skopp farm, Heck Group) with the aim of providing some answers to the questions on productivity gains. Stalk counts from this trial indicate a possible 10% yield advantage in favour of the Dual rows.

Dual row/single row trial site – Rocky Point, December 2001



3.4 Other activities associated with productivity

3.4.1 Weed control – Herbicide trials

Weeds are responsible for lost cane production. A conservative increase of 8,000 tc has been placed in the Cane Production Predictions for Rocky Point from improved weed management.

Local trials with Asulox confirmed the importance of controlling giant paspalum. Trial results showed this weed has the potential to reduce cane production from 80 tc/ha to 30 tc/ha with only two plants per meter of row. Field days were held at trial sites to encourage growers who have the problem to take action for control of this weed.

Early weed control provides the maximum yield. A herbicide meeting with industry representatives and growers was held on 10 July to emphasise the importance of early weed control. Presentations were given by on Balance, Velpar K4 and Flame. Several grower and small plot trials have been conducted with these products with the aim of sorting out the crop tolerance of local varieties and the value of these herbicides to weed management. The dry spring conditions have made collection of useful data very difficult. An analysis of rainfall pattern indicate application of pre-emergent herbicides in November/December will provide a return to growers in most years however there is a lower demand (due to predominantly dry conditions) for using pre-emergent herbicides from July to September.

Reeds have become more noticeable this year and represent a threat to cane production. Propon (herbicide from Nufarm) showed promising results as a tool to help with the management of this weed in cane. The Propon label recommends a directed spray and this is an almost impossible task if good weed coverage is to be obtained. Spraying over the top of cane has caused some crop tolerance problems. This appears to be related to variety and growing conditions. More trials are required to sort out the crop tolerance/variety issue, however weed control with the recommended label rates of application of Propon has been excellent. Tank mixtures of Asulox plus Actril DS have also provided satisfactory weed control, without crop tolerance problems.

Band spraying equipment (Hardi droppers) was fitted to N Floor's boomspray and used to demonstrate the advantage of this technique for reducing herbicide cost. The same equipment has now been fitted to other booms in the district as a method of reducing cost of spraying.

Yellow nutsedge is a common weed in plant cane at Rocky Point and there are no herbicide label recommendations for selective control of this weed in cane. My herbicide trials showed both Sempra and Tornado are very effective herbicides for control of this weed in cane. Actril DS gave very poor control. Tornado has the advantage of being slightly cheaper than Sempra, however Sempra provides a more thorough weed kill. The recommendation would be to use Sempra for small weed patches and Tornado for situations where whole blocks require treatment.

3.5 Soybeans

Rocky Point cane farmer's adoption of growing soybeans is the highest in Queensland when assessed on a soybean to cane area ratio. The benefits of soybeans to the following cane crops is another way Rocky Point cane farmers can boost their cane production and profitability. An extra 3,000 tc/year is expected as a benefit from the growing of soybeans in rotation with cane as an alternative to plough-out replant. The adoption rate of growing legumes in the fallow has been good due to the perfect fit this crop has with organic cane growing. Extra work is required to convince the smaller non-organic grower to change from plough-out replant to soybean fallow.

I attended a soybean workshop in Bundaberg on 20-21 June, conducted by the Sugar Yield Decline Joint Venture (SYDJV) program. The most interesting aspect for me was the possible introduction of a parasite in the near future that will control whitefly – a significant pest of soybeans at Rocky Point.

The SYDJV group held a growers meeting at Rocky Point on 13 March 2002.

3.6 Organic sugar

The area of organic sugar cane production has increased at Rocky Point. Weeds are a potential threat to Organic Sugar production because of the restriction on herbicide use. A herbicide screening trial was conducted using Pine Oil to find a solution to this problem. The results showed this product has very limited potential for weed control in cane. It is very expensive (>\$300/ha), has very poor activity on bellvine and almost no control of grasses beyond the two leaf growth stage.

I assisted Dr Mark Smith and Dr George Anthony from CSIRO with their successful bid for funding from Rural Industries Research and Development Corporation for a scooping study into organic sugarcane.

3.7 Planting – using alternatives to Mercury

Trials in plant cane (September 2001) at Rocky Point demonstrated the combination of Regent as an in-furrow spray and Bumper as a pineapple disease spray/dip can be used as a replacement for Lorsban and Mercury. The aim of the trials was to convince growers to cease the use of Mercury as a fungicide dip for cane. The crop strike was approximately 10% better with the Regent/Bumper treatment and at no extra cost.

3.8 Cane harvesting

Cane loss from harvesting was identified by the Strategic Planning process as requiring immediate attention in the area. Discussions with the mill indicated the preference for a cleaner sample of cane supply to the mill as also being an important issue. BSES researchers have established significant losses occur at harvest and have developed Best Practice Harvesting (BPH) procedure to reduce these losses.

Because of my significant lack of expertise in this area I consulted with BSES engineer Chris Norris for a plan of action. It was decided that the best way forward was with grower education of Best Practice Harvesting (BPH). Tarp tests have been used in the past as a method of assessment for cane losses, however Chris Norris recommended against this method for future tests/benchmarking for cane losses.

Rocky Point harvesting operators and myself attended a BPH meeting at Murwillumbah on 8 June. Chris Norris (BSES Engineering – Bundaberg) gave an excellent presentation on cane losses and an update on the BSES harvesting trial results at Rocky Point on 20 Feb 2001. Matthew James visited Rocky Point on 24 September for a brief casual chat with growers interested in his harvester modifications and research.

3.9 Cane ripeners

Fusilade was applied by helicopter to 20 ha of cane at Rocky Point on 8 June 2001. Response to ccs was less than expected possibly due to the dry conditions before and after application. The concept has merit for increasing grower profitability and more trials were planned for this season, however the dry conditions forced a cancellation of these trials.

Summary of results – Cane ripeners

Farmer cooperator	Crop Type	Variety	CCS		CCS Increase
			Fusilade	Nil	
Heck Group	Plant S/O	Q155	13.53	13.45	0.08
Heck Group	Ratoon 6R	Q151	12.5	12.2	0.3
A Huth	Ratoon 2R	Q151	13.56	13.05	0.51
Keith	Ratoon 3R	Q151	13.98	13.74	0.24
Keith	Ratoon 2R	Q138	11.48	11.1	0.38
D & R Skopp	Ratoon 3R	Q141	13.95	13.4	0.5
D & R Skopp	Ratoon S/O	Q151	12.4	12.4	0

3.10 Leaf tissue testing

Leaf tissue samples were collected from two blocks of cane (Irrigation Trial Site + G Zipf's farm) in February 2001. A Profit Probe meeting was held to discuss Tissue Testing on 29 March at Murwillumbah. Bernard Schroeder (BSES Bundaberg) was the guest speaker. Barry Brooking, Greg Zipf and myself attended the meeting as representatives for Rocky Point.

The results of the Rocky Point tissue tests were very interesting. This method of analysis will be useful for fine-tuning nutrient status of cane when combined with soil tests and yield/ccs data. It was planned to use leaf analysis for looking at the nutrition of organic cane compared to conventional cane this season, however the dry conditions prevented this.

3.11 Orange rust

Two applications of Folicur plus Protec Plus (supplied by Bayer) were made to approximately 2 ha of Q124 on Greg Zipf's farm in March 2001 with the aim of finding out the extend of economic damage caused by the disease. Rust symptoms were severe on lower leaves (L9 >50%) and light on upper foliage (L3 <10%) prior to the first application. The fungicide provided control of the disease however the trial results were not conclusive on the economics of spraying. Details of the trial as follows:

Title:	Folicur demonstration trial for the control of Orange Rust
Trial Site:	Mr Greg Zipf, Raylorn, Mill Road, Woongoolba, Qld 4207
Crop:	Sugar cane, Q124 (Ratoon), Estimated TVD 200 cm 9/3/2001
Target Pest:	Orange Rust (<i>Puccinia kuehnii</i>)
Soil Type:	Sandy Peat, Texture -Clay Loam (30%clay, 50%sand, 20%silt), pH5.0
Products Used:	Folicur [®] SC (430 g/L tebuconazole) + Agridex (oil spray additive)
Application Method:	Boom mounted on a high clearance tractor.
Nozzle Type:	Lurmark Flat fan 03-F110 (Red), 0.5 m spacing
Pressure:	40psi (276 Kpa); Boom Output: 200 L/ha
Application Dates:	Friday 9+ Friday 23 March 2001
Weather/Temperature:	March Max 26-29° C, Min 16-20°
Rainfall:	Wet period from 1–9 Feb (172mm) and 2–12 March (90 mm)
Trial Design:	Non Randomised Replicated (×2), Plot size 1 ha (300 m × 20 rows)
Assessment Method:	The 3 rd , 6 th , and 9 th leaves were removed from 20 randomly selected plants per plot and rated for disease.

Disease Rating Scale: 1 = No Rust; 2 = Slight rust <10% of leaf; 3 = Rust symptoms evident >20% of leaf; 4 = 30 to 40% of leaf infested with rust, necrosis of leaf tips; 5 = Severe rust, severe leaf necrosis, >50% of leaf infested.

Results

Treatment	Leaf No	Disease Rating		
		Pre-spray (9/3/2001)	+ 6weeks (20/4/2001)	+ 10weeks (18/5/2001)
Nil	3 rd	2	3	3
	6 th	3	4	4
	9 th	4	5	5
Folicur 290 mls/ha + Agridex 1 L/ha	3 rd	2	2	2
	6 th	3	2	3
	9 th	4	4	4

Comments

The height of the boom for the first application was touching the top leaves and was not high enough for efficient spray coverage. The boom height was raised for the second application and was considered satisfactory. We were not able to increase the spray pressure above 40 psi. A brief visual inspection of the cane prior to the second application indicated no difference between treatments and very little escalation of the disease.

Orange rust outbreaks occurred throughout the district on Q124 following the wet period in November and again in March. Q124 represents approximately 30% of production. Harvest records at the end of this season should provide a clear indication of the effect of this disease on production. At this stage there has been no commercial application of fungicides for orange rust at Rocky Point.

4.0 BENCHMARKING

4.1 Individual profitability

No adequate benchmark of individual farmer's profitability has been established in the area. An attempt was made to do this through the RCS Profit Probe/ Benchmarking activity group. A meeting was held at Woongoolba Public Hall with approximately 25 farmers on 22 March 2000. From this group 13 farmers indicated they would participate. Material was sent to these people, however only three farmers completed the forms. Because of the small number of participants, the Rocky Point farmers joined the NSW group. The Profit Probe activity has now ceased.

4.2 Communication

A Questionnaire on communication was sent out to all farmers as part of the Strategic Plan (Better R&D Information Delivery System). There was a good response (40%). Only 20% of cane farmers appear to be connected to the Internet. Most farmers have a mobile phone (70%) and 50% have a fax.

Because of the compact nature of the district (5-10 minutes drive from one end to the other) communication meetings were generally held after invitations to all farmers. There appears to be little benefit in breaking the district up into zones and setting up cell groups. For convenience, meetings were generally held at the Woongoolba Lutheran Church Hall. An interesting observation about the education/farmer meetings was the attendance of the same people at each of these meetings. In most cases the farmers who would benefit most from the meetings failed to attend. This could be a reflection of the nature of some of these farmers – a lot have outside jobs and are running the farm as a part time venture.

5.0 HARVESTING & TRANSPORT

The Harvesting and Transport Portfolio Group (HTPG) were very active in the early stages of my employment at Rocky Point. Meetings were held regularly and there was a lot of enthusiasm to get the job done. The recommendations of this group were presented to the "Rocky Point Industry Taskforce Presentation of Industry Options" meeting on 27 March 2001.

One of the recommendations from this meeting was to modify the existing cane transport payment system. The proposal was endorsed by the meeting. I utilised my contacts at the GCCC and produced a map plus an Excel spreadsheet on the distances from the mill to the nearest point of each farm plus the distance from the nearest point to the centre of the farm. These details were then used to formulate the new cartage rebate. The new system of cartage rebate payment was devised to provide rewards to growers who move pads closer to the farm roadside boundary. The changes do not appear to have motivated farmers to change their pad location, however the new system would appear to be more equitable.

Activities of the HTPG have slowed and for all practical purposes are non-existent at present. The reasons for this appear to be centered on lack of agreement on proposed

changes to the harvesting system. There does not appear to be a clear path to resolve this issue.

6.0 REVISED CANE PRODUCTION FORECAST

I predicted we could achieve 500,000 tonnes of cane by 2004 in my “Progress of the Rocky Point Strategic Plan – Annual Report 2001”. This now appears to be beyond our reach in the short term. The 2003 cane harvest forecast is 330,000 tonnes. The following contains my current view on cane expansion predictions for 2005.

Lateral Expansion	7,000 tc (3,000 Beaudesert + 4,000 Gatton)
Irrigation	8,000 tc
Dual Rows	15,000 tc
Improved Weed Control	5,000 tc
Legume fallows	2,000 tc
Total Extra Production	37,000 tc

6.1 Estimated total cane production – 2005

- Good Year 467,000 tc (430,000 tc base production)
- Poor Year 376,000 tc (330,000 tc base production)

7.0 CONCLUSIONS

The short-term analysis of the Rocky Point Strategic Plan would indicate a less than favourable return on the time, effort and money invested into the project. This is based on the failure to reach the increased production targets set by the industry and failure to fulfil the expectations of following in the successful path of the Maryborough Strategic Plan.

Factors beyond our control have been major contributors to this situation. In particular I refer to the low sugar price, the delay in the timing of access to irrigation water from the GCCC Reclaimed Water Scheme and the reduced industry funding for development of quad rows.

An optimistic view is the Rocky Point sugar industry has benefited and will continue to benefit from the project. The nursery for a sugar industry has been established in both Beaudesert and Gatton. Rocky Point farmers and the GCCC Reclaimed Water Scheme have benefited from the results of local irrigation trials. High Density Planting trials have demonstrated the potential for significant increased production from changing row spacing. The adoption of new herbicides and better use of existing herbicides has been promoted and adopted.

The goal of 550,000 is achievable in the long term if the industry works together as a team and makes full utilization of the resources available.

8.0 RECOMMENDATIONS

8.1 Future appointments of development officers

It is my view that the project time of three years is too short to achieve the production goals set by the Strategic Plan, in the current climate of declining sugar prices. A project officer employment term of five years would be ideal.

8.2 Future direction

- Take advantage of the opportunities of Organic Sugar and Ethanol production facilities at the Rocky Point mill.
- Consider the amalgamation of the smaller farms into a large cooperative.
- Support the GCCC Reclaimed Water Scheme.
- Support the BSES and encourage all growers to adopt Best Management Practice farming techniques as outlined by the BSES.
- Try to obtain a level of trust between the mill and growers for the benefit of both parties.
- Reconvene and support the Harvest & Transport Portfolio Group.

9.0 ACTIVITIES FOR GOLD COAST CITY COUNCIL



My overall objective with the GGGC is to provide liaison and consultation between the industry and the GCCC Northern Wastewater Strategy. I have concentrated my efforts for the GCCC on getting to know the farmers and finding out their attitude/requirements on the Reclaimed Water Scheme. A lot of time has also been spent on irrigation trials to demonstrate the benefits of irrigation to Rocky Point cane farmers and determine “Best Management Practice” irrigation for Rocky Point.

Most Rocky Point cane farmers are eagerly waiting for the irrigation section of the Reclaimed Water Scheme to commence. Dry planting conditions in September over the past two years have convinced growers of the need for irrigation. Local irrigation trials have demonstrated the productivity benefits of irrigation in ratoon cane and helped to convince growers to invest in irrigation.

9.1 Report on specific objectives

9.1.1 Expressions of Interest (EOI)/Allocation of Effluent Water for Irrigation

- Meetings between cane farmers and GCCC were organized, as requested.
- Useful comments were made regarding the content of the EOI form.
- Advice has been provided on attitudes of farmers towards the Reclaimed Water Scheme.
- Encouragement and assistance was provided to farmers with the completion of the EOI forms.

9.2 Irrigation trials

The GCCC approved an application for funding of a surface furrow irrigation trial on a small block of first ratoon Q155. Please refer to irrigation section of this report for details.

9.2.1 Communication/farmer education on irrigation

Please refer to the irrigation section of this report.

9.2.2 GCCC Property/cane assignment – R Lehmann’s farm

Assistance was provided to GCCC with management of this farm. This involved organizing for the standing crop harvest and ongoing cultivation/weed spraying until a lease agreement for the farm was finalised. A good crop of cane has been established on this farm and the GCCC can look forward to some returns from this property in the near future.

9.3 Storage sites

Assistance was provided on location of alternate sites for the location of a storage facility for Stage 1A of the Reclaimed Water Scheme.

9.4 Recommendations

The GCCC should encourage the BSES Rural Water Use Efficiency extension staff to continue with the irrigation trials and farmer education of irrigation at Rocky Point.

10.0 ACKNOWLEDGEMENTS

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