

Sugar Research and Development Corporation

Annual Report 2007–08



Australian Government

Sugar Research and Development Corporation

Investing in Sugarcane Industry Innovation

26 September 2008

The Hon. Tony Burke
Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Mr Burke,

In accordance with the requirements of the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act), I submit the Annual Report of the Sugar Research and Development Corporation (SRDC) for 2007–08. The activities of the Corporation are reported against the objectives, strategies, outputs and outcomes of the SRDC Research and Development Plan (R&D Plan) 2007–2012 and are consistent with the 2007–08 Annual Operational Plan and Portfolio Budget Statement.

The report of operations included in the Annual Report has been made in accordance with a resolution of the Directors of SRDC on 26 August 2008. SRDC Directors are responsible under Section 9 of the *Commonwealth Authorities and Companies Act 1997* for the preparation and content of the report of operations in accordance with the Finance Minister's Orders.

SRDC is confident that its performance in 2007–08 contributed to achieving the Corporation's vision for a profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.

I commend this report to you.

Yours sincerely,



I Knop AM
Chairman
Sugar Research and Development Corporation

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Sugar Research and Development Corporation

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1. Highlights

Responding to challenges

Helping the industry manage smut

SRDC is supporting BSES Limited in its work to manage the threat of smut and other diseases. In 2007–08, researchers were able to determine the rate at which smut spread throughout paddocks and regions. They were surprised to find that the rate of spread was a lot faster than initially suspected. This information has been used by industry to take essential early steps to replace susceptible varieties with resistant ones. SRDC has also supported BSES in projects which have seen a significant increase in resistance levels in the breeding program, and the release of two new smut-resistant and one intermediate variety in 2008. (SRDC Project Codes: **BSS256**, **BSS265** and **BSS302**)

Helping industry understand and respond to climate change

As a result of a SRDC-funded and CSIRO-led project, the sugar industry has a better understanding of the possible impacts and effects of climate change. One of the first primary industries to undertake research of this nature, the sugar industry is using the knowledge gathered in this research to inform other projects. This research also informed the second phase of the Managing Climate Variability Program. The findings and recommendations of this research were published in the SRDC Technical Report: "4/2007 Climate change and the Australian sugarcane industry: Impacts, adaptation and R&D opportunities". (SRDC Project Code: **CSE019** and **SRD011**)

Investing in the industry's future

Many of Australia's sugar growing regions are seeing younger generations moving away from the cane industry, but one SRDC-funded project is investing in the industry's leaders of tomorrow. During the six month Advance in Sugar program six participants had the opportunity to invest in personal development, team work and professional development.

Graduates represented production, milling, research and extension and each completed a project which will contribute to the efficiency, professionalism and sustainability of the industry. (SRDC Project Code: **LDI001**)

Collaborating to succeed

Potential gains for the sugar industry can be achieved through collaboration. As well as partnering with research and industry organisations to deliver R&D outcomes, SRDC has partnered other rural research and development corporations on joint ventures including the Climate Change Research Strategy for Primary Industries, Natural Resource Management Collaborative Venture, Managing Climate Variability Program, Life Cycle Assessment in Rural Industries and the Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry.

Empowering grower groups

SRDC's investments have focused on building the innovation skills of the industry. An external review of SRDC's grower group innovation projects found that the biggest industry gains from the program were in the more rapid adoption of practices and farming systems. In terms of individual impact, the growers who were involved in the program reported an increase in their confidence and skills in planning, managing and promoting on-farm research. Through this program growers have successfully worked with researchers and extension staff in on-farm, farmer-driven trials which have resulted in mutual and broader industry benefits.



Investing in change

Putting the precision into agriculture

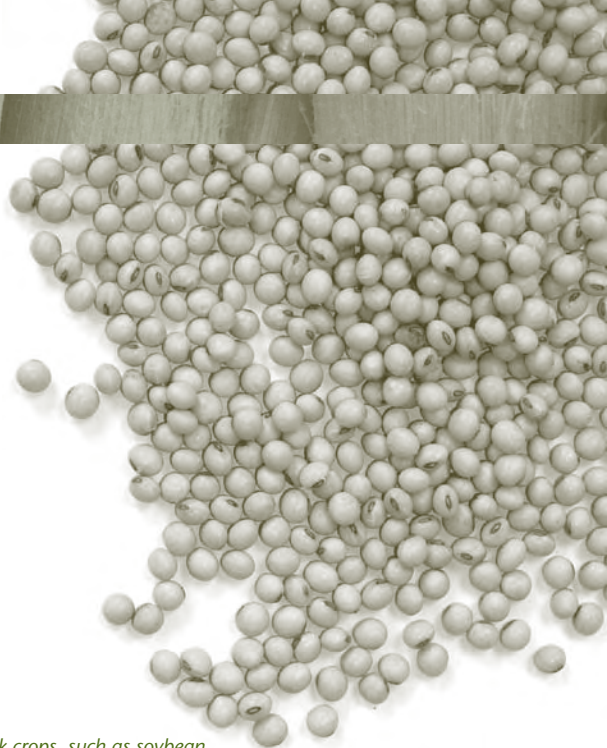
SRDC is working with researchers from CSIRO, BSES Limited and the National Centre for Agricultural Engineering to provide a coordinated approach to research into precision agriculture options for the sugar industry. By adopting and encouraging a collaborative approach SRDC hopes to provide the next step for the industry to capitalise on the advances offered by new farming systems. The findings and recommendations of this research were published in an SRDC Technical Report: 3/2007 Precision agriculture options for the Australian sugarcane industry. (SRDC Project Codes: **CSE018**, **NCA009** and **SRD012**)

Working across the value chain to extend season length

In the Herbert, industry and researchers knew that there were potential rewards along the value chain through optimising the length of the harvesting season and capitalising on geographical variation of the sugar content of cane. A BSES Limited-led project has industry in the Herbert investigating options to achieve this. The project has provided stakeholders with the opportunity of better understanding supply-chain issues and of investigating further opportunities to increase monetary returns. (SRDC Project Code: **BSS264**)

Managing nitrogen

As the cost of on-farm inputs such as fertiliser continues to rise, SRDC is working with researchers from BSES Limited and CSIRO Sustainable Ecosystems to help growers save money by determining the ideal rate of nitrogen to apply. Growers have participated in a number of workshops and have indicated that the combined results of these projects will improve industry's ability to apply the correct amount of nitrogen, saving money and the environment – particularly the Great Barrier Reef. (SRDC Project Codes: **BSS268** and **CSE011**)



Break crops, such as soybean, are giving sugarcane growers another income option.

Soybean investment in break crops

Thanks to SRDC funding, in late 2007 CSIRO Plant Industry announced the release of another new soybean variety, 'Fraser', suited to the Fraser coast region of Queensland. Fraser has excellent grain quality with high protein content, a clear hilum and is suitable for the feed and oilseed crushing markets. With diversification often being the key to increased profit, this type of research, which has given many sugarcane growers another income option, is paramount for industry development. Well-grown soybeans also reduce the need for costly nitrogen fertiliser in the following cane crop. (SRDC Project Code: **CPI009**)

Working out what goes on in the soil

Although still in its early days, a project led by the University of Queensland is showing great promise in its ability to help growers understand the importance of soil microbes to soil health and crop production. Molecular markers which are being investigated could become important diagnostic tools to help growers achieve healthier soils by understanding the desired microbial conditions for improved soil health and nutrient cycling. (SRDC Project Code: **UQ043**)



Valuing harvesting information

Harvester operators worked with researchers in the Burdekin to understand how operating information improves their performance. By collecting information including basic operating data, block data and inter-farm comparisons, it is anticipated that a benchmarking system could be created which would enable harvest groups to measure their performance. This project has been instrumental in changing harvester operators' attitude to change. (SRDC Project Code: **CSR033**)

Defeating the autumn predictability barrier

Climate forecasts are crucial for Australian sugar industry planning. Researchers at James Cook University are testing a climate forecasting system that demonstrates remarkable promise in overcoming the autumn predictability barrier. Improving strategic systems thinking could lead to a reduction in costs associated with wet weather during the harvest season, improved harvest schedules, less risk of leaving cane unharvested, better industry awareness of productivity supply patterns and better decision making amongst industry members when deciding the harvest season start date. Already, members of industry are considering this tool when planning. (SRDC Project Code: **JCU027**)

Improved mud filtration technology makes mill mud cheaper to transport and easier to apply.

Giving women the support they need

A number of SRDC funded projects are helping women gain the skills and confidence they need to take on leadership roles within the industry. These projects are connecting women with mentors, providing training opportunities and giving them confidence. Importantly, these projects are helping industry leaders and organisations capitalise on this underutilised resource by identifying strategies to support women. (SRDC Project Codes: **CGH001** and **CMC001**)

Improving the effectiveness of mud filtration

Since 2006, SRI (QUT) have been trialling two different types of filters with the aim to improve the cost-effectiveness of mud filtration. The team have been able to achieve dry cakes with equipment costs significantly below the standard rotary vacuum filters currently in use in Australian sugar mills. The reduction in moisture content of the filter cake will mean cheaper transportation costs, with savings estimated for an average sized factory of \$100,000 per season. The reduced transportation costs should lead to reduced accumulation of heavy metals in the cane fields near the mill, as the drier filter cake can be transported more economically to more distant fields. (SRDC Project Code: **QUT012**)

2. Overview of SRDC

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Our business

SRDC invests in research conducted by others rather than carrying out research itself. SRDC takes a strategic view of the needs and opportunities for R&D in the sugar industry, based on feedback from industry, then identifies and invests in appropriate R&D activities to pursue these opportunities.

SRDC is part of a larger network of rural R&D Corporations (RDCs) which similarly invest in the conduct of R&D and implementation of outcomes for Australian rural industries. The features of the RDC model are outlined below.

Features of the R&D Corporations model

- The RDCs take a **leading national role** in planning, investing in and managing R&D for their respective industries.
- RDCs are not research “grant” agencies. Their enabling legislation requires them to treat R&D as an **investment in economic, environmental and social benefits** to their industries and to the people of Australia.
- Rather than focussing mainly on generating new knowledge for its own sake, RDCs strive to **deliver high rates of return** on R&D investment by influencing the full range of interactions along the innovation chain.
- Striving for high returns on investment also leads RDCs to apply significant resources to **translating research outputs into practical outcomes**.
- RDCs are required to conduct their activities in accordance with strategic R&D plans and annual operational plans that **take account of the R&D needs of end-users** and other stakeholders. The plans are approved at ministerial level.
- Although RDCs fund basic research, a **high proportion of activity is applied R&D** – both short-term and long-term.
- RDCs are **fully accountable** to their major stakeholders and to the wider community.

SRDC’s Core Business is to foster an innovative and sustainable Australian sugar industry through targeted investment in research and development.

An **innovative** sugar industry will build capacity in people to capitalise on and embrace advances in science, engineering and technology.

A **sustainable** sugar industry should combine the 3 Ps: profit (economy), planet (environment), and people (society).

SRDC works in partnership with industry, government, R&D partners and associated rural communities to underpin a vibrant sugar industry with the object of achieving the Corporation’s **Corporate Outcome**:

A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.

SRDC strives to create an environment that recognises the value of innovation – change that adds value. SRDC invests in R&D activities to find new and improved ways of doing things rather than funding core or ongoing services. The Corporation is committed to setting the right targets, managing investments so they succeed and making sure research delivers impacts across the Australian sugar industry.

In short, SRDC is firmly committed to maximising the return on industry and Government investment into research and development.

SRDC obtains income from levies paid by the sugar industry, matching funds from the Australian Government, and interest. In 2007–08 the levy remained at \$0.14 per tonne of sugarcane harvested, divided equally between growers and millers.

Industry and R&D environment

The Australian sugar industry produces raw and refined sugar from sugarcane. Income is also derived from by-products including ethanol and molasses, and from generation of electricity. While Australia produces only three to four per cent of the world sugar supply, it exports approximately eight per cent of the sugar traded worldwide.

In 2007–08 production of sugar cane fell to 35 million tonnes largely as a result of unfavourable weather conditions and a reduction in the area harvested. Excessive rainfall close to and during the harvest produced a reduction in both cane and sugar yields in northern cane producing areas. Meanwhile, in addition to drought in southern Queensland, areas of southern Queensland and northern New South Wales experienced periods of frost which resulted in affected cane being cut for fodder.

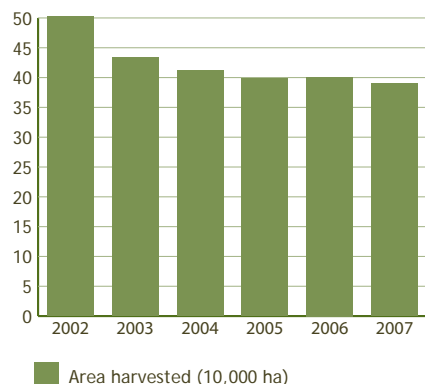
In the far north of Queensland, the high prices offered for land by MIS Forestry companies have seen a reduction in the area of land farmed under cane. While in other regions, especially Central, many growers have responded to period of low grower returns by turning to more lucrative jobs in the mining industry, which has also seen a reduction in the area of cane harvested.

Despite a smaller Australian cane harvest (11.92t/ha in 2007–08 compared with 15.06t/ha in 2006–07), an increase in average CCS value led to a lower decline in sugar yield than otherwise may have been expected from the cane harvested.

International sugar prices can fluctuate considerably from year to year, and real returns in Australian dollars are often only marginally above the cost of production. The gross value of cane in the five years to 2007–08 varied between \$850 million and \$1,180 million. Sugar, like other commodities, has experienced higher than normal price fluctuations with the international economic turmoil of 2007–08.

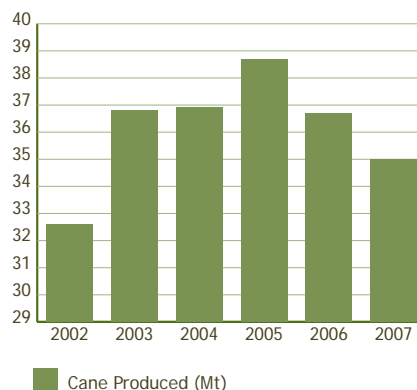
Estimated total funds available for sugar industry R&D in 2007–08 were \$57.4 million, of which 38 per cent was contributed by the industry. This total consisted of \$13 million from SRDC; \$32 million from R&D providers including CSIRO, Universities, BSES Ltd and Productivity Services companies; and \$12.4 million from the CRC for Sugar Industry Innovation through Biotechnology.

Figure 2.1: Area of cane harvested 2002–2007 (10,000 ha)



Source: Australian Sugar Year Book 2008

Figure 2.2: Cane produced 2002–2007 (Mt)



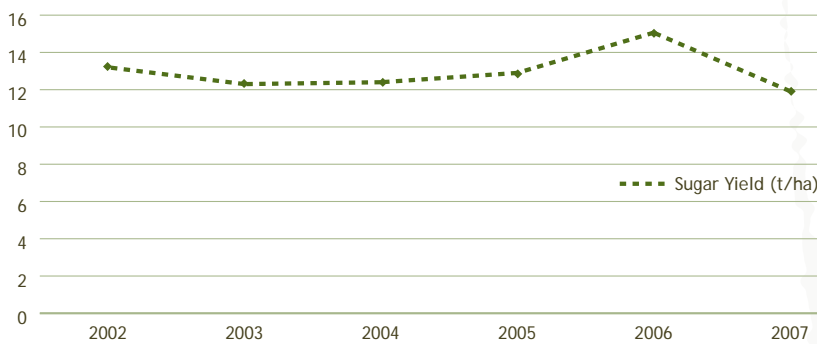
Source: Australian Sugar Year Book 2008

Figure 2.3: Gross value of product 2002–2007 (\$100m)



Source: ABARE Commodity Statistics 2007

Figure 2.4: Sugar yield 2002–2007 (t/ha)



Source: Australian Sugar Year Book 2008

Project investments

The *Primary Industries and Energy Research and Development Act 1989* (PIERD Act) requires SRDC to make effective use of Australia's scientific resources, and SRDC strives to create an environment which ensures a high return on investment.

SRDC has adopted a competitive approach to R&D investments and each project proposal is assessed using an attractiveness/ feasibility framework. This approach is explained in further detail in Section 5.

In 2007–08, SRDC continued to place considerable effort into ensuring that the results of research and development projects deliver benefits to the Australian sugarcane industry. Thus, SRDC places an emphasis on partnerships between industry sectors and within and between regions.

SRDC invested in four types of projects in 2007–08:

- Research Projects which comprise around 90 per cent of project funding
- Scholarship Projects support postgraduate study
- Travel and Learning Opportunity Projects (TLOP) support specific learning opportunities for individuals or groups
- Grower Group Innovation Projects (GGIP).

The proportion of funding allocated to each project type is represented in Figure 2.5.

Tables 2.1 and 2.2 provide a snapshot of project and reporting statistics for the periods 2006–07 and 2007–08.

Figure 2.5: Proportion by funding of SRDC project types as at 30 June 2008

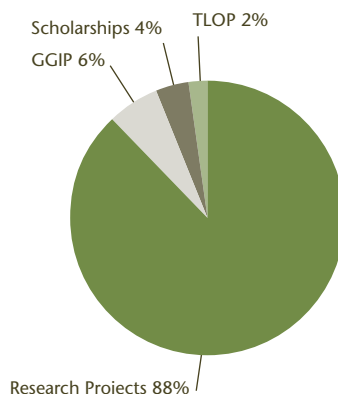


Table 2.1: SRDC Project Statistics

Projects	2007–08	2006–07
Research Projects	83	87
Scholarships	13	12
Grower Group Innovation Projects	35	29
Travel and Learning Opportunity Projects	43	58

Table 2.2: Project reports received 2007–08 and 2006–07

	2007–08	2006–07
Milestone Reports	378	414
Final reports	63	57

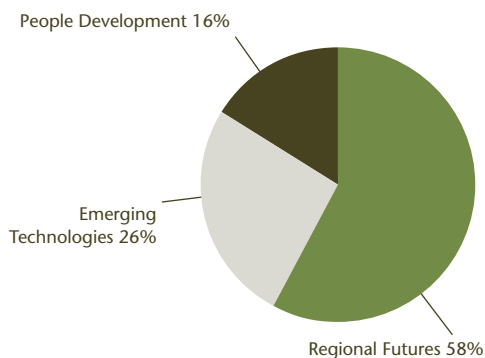
SRDC works closely with all research partners to ensure an efficient and effective process is in place to complete all research projects on time.

The target allocations for each Investment Arena were identified in the SRDC R&D Plan 2007–2012 and Annual Operational Plan 2007–08 (Table 2.3). The distribution of project funding across the three Arenas is illustrated in Figure 2.6.

Table 2.3 Outcomes, outputs and inputs in the R&D Plan 2007–2012

CORPORATE OUTCOME	<i>A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.</i>		
INVESTMENT ARENAS	REGIONAL FUTURES	EMERGING TECHNOLOGIES	PEOPLE DEVELOPMENT
ARENA OUTCOMES	<i>Implementation of innovative farming, harvesting, transport, milling and marketing systems tailored to the needs and opportunities of each region</i>	<i>Rapid translation of relevant emerging technologies that will enhance the industry's competitive edge in the global marketplace</i>	<i>Development of individuals and networks across the sugarcane industry that enhance the capacity for continuous improvement</i>
OUTPUTS	<ul style="list-style-type: none"> ■ Value chain integration ■ Farming and harvesting systems ■ Transport, milling and marketing systems 	<ul style="list-style-type: none"> ■ Genetics and breeding systems ■ Farming, harvesting, transport, milling, and marketing systems 	<ul style="list-style-type: none"> ■ Individual capacity ■ Social capacity
INPUTS – proportion of resources	60–65%	20–25%	15–20%

Figure 2.6: Distribution of project funding as at 30 June 2008



Partnering and collaboration

Partnerships are the cornerstone of SRDC's investment portfolio.

The Corporation is committed to encouraging collaboration at all parts of the project life cycle. This focus on partnering to succeed is ensuring sectors of industry are working together to achieve positive outcomes. It is also resulting in greater collaboration between regions.

Sharing knowledge and ideas benefits the entire industry through the improved adoption of research findings.

SRDC's continued investment in Grower Group Innovation Projects is one strategy making a dramatic impact on industry. Groups of growers are working with researchers to experiment, learn and adapt research findings to their local conditions. Researchers are also benefiting from the direct feedback they receive.

SRDC is a core party of the CRC for Sugar Industry Innovation through Biotechnology (CRC SIIB) along with BSES Limited, CSIRO Plant Industry, Southern Cross University and The University of Queensland. The CRC commenced in August 2003 with a mission to increase the value of Australian sugarcane by developing and delivering new plant varieties, products and processes through the application of biotechnology.

SRDC is a member of, and provides the secretariat for, the Sugar R&D Alliance – a voluntary association of key industry and R&D organisations serving the sugar industry. It monitors resource allocation on a whole-of-industry basis and fosters cooperation among sugar R&D providers to deliver improved industry profitability and sustainability.

In 2007–08, SRDC collaborated with the Department of Agriculture, Fisheries and Forestry and other rural research and development corporations on programs and initiatives including:

- Climate Change Research Strategy for Primary Industries
- Cooperative Venture for Capacity Building for Innovation in Rural Industries
- National Programme for Sustainable Irrigation
- Farm Health and Safety Joint Research Venture
- Natural Resource Management Collaborative Venture
- Managing Climate Variability Program
- Life Cycle Assessment in Rural Industries
- Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry.

Sharing knowledge and ideas benefits the entire industry through the improved adoption of research findings.

Income and expenditure

SRDC's income and expenditure for 2007–08 compared with that forecast in the Annual Operational Plan 2007–08 are set out in Table 2.4. Full financial statements are included in Section 6.

Table 2.4: Forecast and actual income and expenditure for 2007–08

	Forecast \$m	Actual \$m
Income:		
Industry Levies	5.348	5.028
Australian Government Contribution (<i>matching levy funding</i>)	5.348	5.283
Australian Government Contribution (<i>Regional and Community Project Funding</i>)	0	1.0
Other	0.500	0.847
Total Income	11.196	12.158
Expenditure:		
R&D Projects	11.024	9.139
Operation of SRDC	2.039	1.954
Total Expenditure	13.063	11.093

Income in 2007–08 was higher than forecast because of the receipt of \$1m of Regional and Community Projects (RCP) funds from the Sugar Industry Reform Program for R&D to accelerate the delivery of improved sugarcane varieties. Project expenditure with those funds will commence from July 2008. Apart from the RCP funds, industry levies and government matching income were slightly below forecast due to reduced crop size, and other income (interest and royalties) was above forecast. Expenditure both on R&D projects and operations was lower than forecast. Reduced project expenditure was due to delayed commencement of some new projects, delays in some milestones until 2008–09, and early conclusion of some projects. Operational expenditure was slightly below forecast due to staffing changes. SRDC's cash reserve at 30 June 2008 was \$8.117 million. Table 2.5 summarises the actual income and expenditure over the past five years.

Table 2.5 Five years budget at a glance (\$m)

	2007–08		2006–07	2005–06	2004–05	2003–04
Revenue	12.158	↑	11.134	11.125	9.438	10.940
Expenditure	11.093	↑	10.724	10.160	8.637	8.914
Operating Surplus/(deficit)	1.065	↑	0.411	0.966	0.801	2.027
Total assets	11.273	↑	9.236	8.887	7.714	8.010
Total equity	9.608	↑	8.557	8.146	7.181	6.386
Industry contributions	5.028	↑	4.887	5.342	5.131	5.312
Commonwealth contributions	6.283	↑	5.522	5.195	3.756	5.191
R&D expenses	9.139	↑	9.025	8.458	7.018	5.592

Report from the Chairman and Executive Director

Challenges and opportunities for the sugar industry

The Australian sugarcane industry was again faced with opportunities and challenges in 2007–08 – and as this report demonstrates, SRDC’s investment in R&D has helped capitalise on opportunities and mitigate the impact of the challenges.

A reduction in crop size, changes in the value of the Australian dollar and the continued rising costs of inputs such as fertiliser and fuel have issued a stark reminder of the need to embrace innovation to remain competitive.

Underpinning industry’s ability to remain sustainable in the face of these adverse conditions is its access to, and willingness to adopt, innovation. Innovation is the key for industry to ensure it can withstand market forces and environmental concerns. The role of R&D in helping industry to embrace innovative practices and technologies has never been more critical.

The challenge for SRDC in 2007–08 was to make sure its investments hit their mark. As outlined in the highlights section of this Annual Report, the Corporation’s investments have helped industry prepare for and respond to a range of challenges and issues.

For the first time, climate variability and climate change were included as Rural Research Priorities (RRP) when the Government’s new RRP’s were announced in May 2007.

Pleasingly, by 2007–08 SRDC had already undertaken a number of efforts to help the Australian sugarcane industry prepare for and respond to the impacts of climate change. As a contributor to the Managing Climate Variability Program – a collaborative Research and Development Corporations’ activity – SRDC is ensuring the Australian sugarcane industry has access to a wealth of information to ensure it is positioned to mitigate the possible impacts of climate change. SRDC’s investments

have helped industry to manage water more efficiently and make significant improvements in water quality.

SRDC’s investments have focused on building the innovation skills of the industry. In 2007–08, SRDC commissioned an external review of its grower group innovation projects. Through this program growers have successfully worked with researchers and extension staff in on-farm, farmer-driven trials which have resulted in mutual and broader industry benefits.

The review found that the biggest industry gains from the program were in the more rapid adoption of practices and farming systems. In terms of individual impact, the growers who were involved in the program reported an increase in their confidence and skills in planning, managing and promoting on-farm research.

SRDC is investing in research to help the industry adopt precision agriculture. SRDC hopes that by encouraging a collaborative approach to precision agriculture research in the sugarcane industry it will provide the next step for the industry to capitalise on the advances offered by new farming systems.

As a contributor to the Managing Climate Variability Program – a collaborative Research and Development Corporations’ activity – SRDC is ensuring the Australian sugarcane industry has access to a wealth of information to ensure it is positioned to mitigate the possible impacts of climate change.

New directions

2007–08 marked a year of change for SRDC. The appointment of a new Executive Director, Chairman and Board has repositioned the Corporation to reinvigorate its investment in R&D activities and so meet the needs of industry and government stakeholders.

In June 2008, the Corporation celebrated the launch of the SRDC Research and Development Plan 2007–2012 by the Honourable Tony Burke MP, Minister for Agriculture, Fisheries and Forestry at the Heck Group’s Rocky Point Mill. Mr Burke was positive about the opportunities available for the Australian sugarcane industry and indicated that the plan focussed on meeting industry’s and Government’s priorities.

This plan provides the framework in which we now have to collectively define specific projects that will enable us to face the many challenges that currently exist and turn them into real opportunities for a prosperous and sustainable future. Mr Burke pointed out at the plan’s launch that the issues that we are facing are similar to those experienced by our global competitors, but that targeted R&D investment offers us the opportunity to get ahead of the game.

This industry has never been at such a major cross road. Despite the current general negative sentiment in the industry there are many exciting opportunities and together we can work towards making them a reality.

The projected reduction in SRDC’s budget, which comes as a direct result of a reduction in the crop size, means that we need to reflect on our portfolio and invest in more ‘big’ projects which offer lower overhead costs and a higher potential rate of return.

2007–08 marked a year of change for SRDC. The appointment of a new Executive Director, Chairman and Board has repositioned the Corporation to reinvigorate its investment in R&D activities and so meet the needs of industry and government stakeholders.

Towards its goal of remaining responsive to the needs of industry the Corporation will adopt a more regional approach to the way we do business.

We will have to change our R&D efforts in many ways for the sugarcane industry to remain vibrant. Realisation of the many opportunities will require true leadership, forward-thinking, vision, integration of stakeholders and investment in new approaches. This is something the Sugar Research and Development Corporation is committed to working with industry and government to achieve.

We move into 2008–09 with a renewed focus on delivering the R&D outcomes the Australian sugarcane industry needs to advance.



A handwritten signature in black ink, appearing to read 'Frikkie Botha'.

Frikkie Botha
Executive Director



A handwritten signature in black ink, appearing to read 'Ian Knop'.

Ian Knop AM
Chairman

3. Our Outcomes

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Outcomes and outputs

The SRDC Corporate Outcome is:

A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.

The SRDC R&D Plan 2007–2012 outlines three Investment Arenas on which the R&D portfolio is based to achieve this Corporate Outcome.

It nominates Arena Outcomes and Outputs, and provides target ranges for the allocation of resources to the Investment Arenas. Table 3.1 illustrates the relationships between SRDC's Corporate Outcome, Arena Outcomes, Outputs and Inputs. It also demonstrates the performance of each Arena against project targets in the SRDC Annual Operational Plan 2007–08.

Table 3.1 Outcomes, Arenas and Targets

CORPORATE OUTCOME			
<i>A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.</i>			
INVESTMENT ARENAS	REGIONAL FUTURES	EMERGING TECHNOLOGIES	PEOPLE DEVELOPMENT
Arena outcomes	Implementation of innovative farming, harvesting, transport, milling and marketing systems tailored to the needs and opportunities of each region	Rapid translation of relevant emerging technologies that will enhance the industry's competitive edge in the global marketplace	Development of individuals and networks across the sugarcane industry that enhance the capacity for continuous improvement
Outputs	<ul style="list-style-type: none"> ■ Value chain integration ■ Farming and harvesting systems ■ Transport, milling and marketing systems 	<ul style="list-style-type: none"> ■ Genetics and breeding systems ■ Farming, harvesting, transport, milling, and marketing systems 	<ul style="list-style-type: none"> ■ Individual capacity ■ Social capacity
PROJECT TARGETS (identified in the SRDC Annual Operational Plan 2007–08)			
Inputs (proportion of resources)			
Target	60–65%	20–25%	15–20%
Actual	58%	26%	16%
Number of continuing projects			
Target	56	12	39
Actual	60	12	55
Number of new projects			
Target	16	4	1
Actual	16	4	1
Number of scholarships			
Target	-	-	17
Actual	-	-	13

Research Priorities

SRDC investments contribute to the National Research Priorities and the Rural R&D Priorities of the Australian Government, which were announced in December 2002 and March 2003 respectively.

National Research Priorities

The four broad headings of the National Research Priorities (NRP) are:

- An environmentally sustainable Australia
- Promoting and maintaining good health
- Frontier technologies for building and transforming Australian industries
- Safeguarding Australia.

Figure 3.1 illustrates the proportion of SRDC funds invested in each NRP.

Figure 3.1 Allocation of SRDC funds by National Research Priority

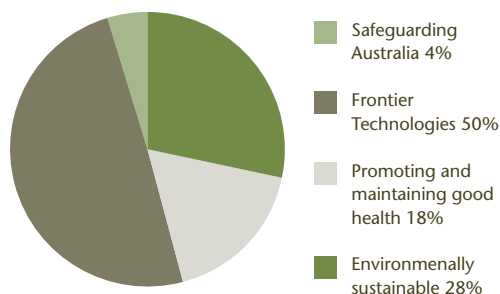


Figure 3.2 Allocation of SRDC funds by Rural R&D Priority

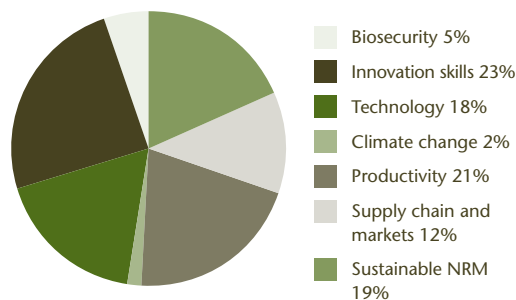


Figure 3.2 illustrates the proportion of SRDC funds invested in each Rural R&D Priority.

Rural Research and Development Priorities

The Rural Research and Development Priorities (RRDP) are framed within the National Research Priorities and focus on issues relevant to rural industries. They are:

- Productivity and adding value – *Improve the productivity and profitability of existing industries and support the development of viable new industries*
- Supply chain and markets – *Better understand and respond to domestic and international market and consumer requirements and improve the flow of such information through the supply chain, including to consumers*
- Natural resource management – *Support effective management of Australia’s natural resources to ensure primary industries are both economically and environmentally sustainable*
- Climate variability and climate change – *Build resilience to climate variability and adapt to and mitigate the effects of climate change*
- Biosecurity – *Protect Australia’s community, primary industries and environment from biosecurity threats.*

Supporting priorities:

- Innovation skills – *Improve the skills to undertake research and apply its findings*
- Technology – *Promote the development of new and existing technologies.*

Industry Priorities

In addition to the National and Rural R&D Priorities, SRDC is also guided by industry priorities. Throughout 2007–08 SRDC consulted with industry through regular meetings with its Representative Bodies as well as industry wide workshops in April and May of 2008.

The top three issues identified as priority areas for each sugarcane growing region were:

Ballina

1. Biomass value-adding
2. Breeding frost resistant canes
3. Economics, production and environmental benefits of biochar

Bundaberg

1. Product diversification
2. Farming systems
3. Plant breeding and varieties

Burdekin

1. Water management
2. Utilisation of total biomass
3. Soil health/Capacity building by extension (equal rating)

Far North Queensland

1. Define and develop 'energy cane' concept
2. Resource use efficiency
3. More efficient harvesting

Isis

1. Improved farming systems
2. Varieties
3. Developing a united vision

Herbert

1. More value from crops
2. Whole of crop harvesting
3. Double productivity at half the production cost

Mackay

1. Rigidity of current milling/production systems for diversification
2. Value adding
3. Survival of grower

Proserpine

1. Profitability
2. Soil health and water quality
3. Input cost reduction

Tully

1. Other products from sugarcane
2. More suitable varieties
3. More profit

SRDC regularly met with industry in 2007–08 to keep abreast of industry issues.

Investment Arena: Regional Futures

Indicator	Enhanced structure and functioning of regional sugarcane industry value chains
Measure	Demonstration of improved integration of the industry value chain within regions delivering increased profitability and more efficient use of capital based on environmentally responsible and safe business practices
NRPs	Promoting and maintaining good health
RRPs	Supply chain and markets; Climate variability and climate change; Productivity and adding value

Enhancing industry preparedness – climate change

SRDC’s investments are helping industry prepare for and respond to the possible impacts of climate change. In 2006–07, SRDC commissioned a report to help the Australian sugarcane industry identify options, as well as set R&D priorities, for adapting to climate change.

Researchers from CSIRO and QDPI&F joined forces to assess the likely impact of climate change on the industry and to work out ways to capitalise on the potential benefits of a generally warmer and drier climate, while minimising the negative effects.

A publication was launched in November 2007 outlining the report’s findings *Climate Change and the Australian Sugarcane Industry: Impacts, adaptation and R&D opportunities*, along with a review of workshops conducted as part of this research. This publication is available from SRDC or on the Publications page of the SRDC website. The R&D needs identified in this report will better inform the sugarcane industry on best-bet options for adaptation to climate change. (SRDC Project Codes: **SRD011**, **CSE019**)

Researchers from CSIRO and QDPI&F joined forces to assess the likely impact of climate change on the industry and to work out ways to capitalise on the potential benefits of a generally warmer and drier climate, while minimising the negative effects.

This research also informed the second phase of the Managing Climate Variability Program – a collaborative Research and Development Corporations’ activity which is focussed on increasing Australia’s capacity to capture opportunities and manage risks related to climate variability.

Building on the success of the first phase of the program (which was completed in 2006–07) the second phase of this joint venture will address seasonal forecasting, water resources, agricultural applications and adaptation to climate change. (SRDC Project Code: **CVA003**).

SRDC has joined a new RDC Joint Venture, Climate Change Research Strategy for Primary Industries (CCRSPI), which includes Land and Water Australia, Cotton RDC, Dairy Australia, Rural Industries RDC, Meat and Livestock Australia, Wool Innovation, Grape and Wine RDC and Grains RDC.

An overarching strategy of six themes for national collaborative action has been developed and is currently being edited in the first phase of the venture. The six themes are: future climates, economic analyses, life-cycle analyses, adaptation, mitigation and coordination.

All RDCs have agreed in principle to continue with a second phase of this initiative. The primary aim of this phase will be to have a clear path forward for a co-ordinated and collaborative national research effort that will prepare primary industries (agriculture, fisheries and forestry) for the challenges and opportunities of climate change. As a result of the different interactions happening around

this initiative, an issue that is expected to have some early 'urgent and important' investments is emissions trading. Details of future SRDC's investments into this area will be set out in future Annual Operational Plans.

SRDC also supported CSIRO researcher Dr Sarah Park through a Travel and Learning Opportunity Project to investigate current and potential environmental benefits of sugarcane landscapes. This travel covered two areas of research that are currently highly topical within the Australian sugarcane industry: the impacts of climate change on the industry and the capacity to adapt, and the identification of ecosystem services (ecoservices) and potential mechanisms to financially reward landowners who facilitate these (i.e. agricultural environment schemes). (SRDC Project Code: **CSE021**)

Breaking the autumn predictability barrier

Climate forecasts are crucial for Australian sugar industry planning. Knowledge about the chance of rain during the cane harvest season (i.e. June–Nov) made available early in the year (i.e. Jan–Mar) would offer enormous scope for enhancing industry forward planning activities. It is widely recognised that many climate forecast systems have limited skill when predicting across autumn – however a James Cook University-led project is changing this.

Knowledge about the chance of rain during the cane harvest season early in the year would offer enormous scope for enhancing industry forward planning activities.

The project team is working with growers and oceanographers from Florida State University (FSU) to test the applicability of the long lead climate forecasting model for a range of sugarcane growing regions in Queensland and NSW.

In March 2007 this project warned industry about the threat of a La Nina evolving during the second half of 2007 – which actually happened. This was an historic moment - for the first time, the Australian sugar industry had insight into harvest climate conditions before the autumn barrier. The project team reported that one farmer in New South Wales who decided very early in the harvest cycle to harvest his plant cane earlier than he normally would, to protect the young cane from flooding rains, was extremely pleased with his decision.

All industry consultative groups who are part of this project have a favourable opinion about the FSU model. Plans are now in place to ensure the regions represented by the consultative groups have the local capacity and necessary tools to deliver these forecasts after this project has finished. (SRDC Project Code: **JCU027**)

For the first time, the Australian sugar industry had insight into harvest climate conditions before the autumn barrier.

Life cycle assessment in rural industries

All primary industries use energy and water resources throughout their supply chains - and all produce greenhouse emissions. In the future it is probable that industries will be called to account for their emissions and energy and water use. Already consumers in Europe are seeking information on the life cycle of primary products and the 'food miles' imported goods have travelled. Energy and water consumed per standard unit of product are becoming important issues.

Life cycle assessment (LCA) also has the potential to accurately inform Triple Bottom Line reporting. In 2007–08 SRDC collaborated with other rural R&D Corporations in an RIRDC-led project to develop common approaches to conducting LCAs for primary industries. This research also helped to build a shared understanding within the RDCs, their producer stakeholders, customers and the regulatory authorities with respect to life-cycle analysis, including a shared learning from previous life-cycle assessment projects. (SRDC Project Code: **RIR001**)

Improved value-chain operations and utilisation of capital

SRDC's investments in the Regional Futures Arena have helped the industry to take advantage of opportunities to increase the profitability and sustainability of the entire value chain. A number of projects are focussed on the facilitation of change across regions and mill areas.

In the Herbert, industry and researchers knew that there were potential rewards along the value chain by optimising the length of the harvesting season and capitalising on geographical variation of the sugar content of cane. A BSES Limited-led project supports industry investigating options to achieve this.

Millers in particular stand to gain from longer crushing seasons through increased utilisation and return on their capital; however one of the main challenges in starting the crush earlier in the season is the relatively low juice purity and low CCS levels.

The project showed that when season lengthening is required, extension of the season forward, as opposed to lengthening the season at the end of the harvest window should be considered. The advantages of an earlier start far outweigh the advantages of a late harvest finish, because of the loss in sugar yield, loss of yield in subsequent ratoons, and the possibility of premature ploughing out of a crop due to ratoon failure. Varieties were identified for optimum productivity at different times in the harvesting season and this should assist in improving the management of varieties.

The results indicated that the industry has the potential to increase the monetary returns through the management of varieties, avoiding harvesting of ratooning cane after early November in the Herbert, harvesting plough-out cane last if the harvesting season is going to continue after early to mid November and to avoid losses associated with late-harvested cane. The project also highlighted the potential for a crop ripener such as MODDUS® to improve early CCS. Crop ripeners should be considered as a management tool for early harvested cane.

In considering the possible impacts across industry of extending the harvest season, the project provided stakeholders an opportunity to better understand supply-chain issues and to investigate further opportunities to increase monetary returns. There is an increasing willingness and ability of people in the Herbert to evaluate and implement some of the practices towards increasing season length and sugar yields. (SRDC Project Code: **BSS264**)

SugarMax to improve harvest management planning

Two projects are investigating the implementation of harvest management planning tools including SugarMax (developed by CSIRO as part of an earlier project).

A CANEGROWERS Herbert River-led project is attempting to implement more robust and adaptable harvesting and transport operations (including increased capacity and reliability) which better accommodate day-to-day disruptions and increase cane supply to the mill.

The Herbert region, particularly its harvesting and transport sector, has evolved faster in the last two years than at any previous time. There has been rapid progress in the region's drive towards automated management of harvesting and transport logistics through the harvest booking system, integrated with harvester rostering and improved transport planning. This SRDC-funded project has adapted to meet these priorities within the region, and it is exceeding many of its original objectives.

The SugarMax model has been developed to account for variation on productivity zones, varieties and soils, and has been reprogrammed to be more generic and transferable among regions and more user-friendly. The SugarMax tool was adopted in 2007 to develop harvesting plans for four groups with farms in several locations. Project participants said that it was particularly beneficial for expanding harvesting groups. In 2008 it will be adopted by 11 harvesters.

The following tools are expected to be ready for use by CSR and the harvesters for the start of the 2008 harvest season: an enhanced version of the web based siding booking system developed by CQU and currently used at Proserpine; a user friendly version of the harvester roster model, linked with TOTools (a decision support tool for traffic officers in sugar

mills); and a new transport roster to capture efficiency gains from the new sidings and harvester reductions.

It is expected that in the 2008 season there will be a more complete assessment of the improvements made to systems and the impacts the use of the redeveloped tools have on the value chain. (SRDC Project Code: **CGH002**)

A second project is improving harvest management in the Tully district. The project is aligned with the Tully Productivity Plan and is aimed at improving understanding among growers, harvesters and millers of the benefits of improved harvest planning decision making. Tully growers are collaborating with researchers to ensure that a usable harvest management tool is developed by calibrating the SugarMax and VarietyMax tools. Although 70 percent of the participants did not follow the plans developed (because of weather conditions), they saw value in the information provided and there is evidence that the tool has stimulated changes in practice. One of the lessons was that the plans need to be flexible and allow for changes. There is a growing desire for a web tool that allows changes to be made and information sharing with mills. (SRDC Project Code: **CGT001**)

Technology to assess cane quality in the blink of an eye

Near Infrared (NIR) analysers allow for the rapid, non-destructive analysis of foods, beverages, grains, chemicals, plastics/polymers, textiles and pharmaceuticals. In sugar mills, NIR can provide a range of information on the nutritional status and composition of sugarcane that can be attributed to a geographic position and provide information to fine-tune nutrient management. In addition, NIR calibrations to assess cane quality provide feedback to harvesters and millers to enable more efficient operation and production.

The Mackay region has recognised the potential of NIR to be used as a measuring technique for cane nutrients, to assist growers in making management decisions, to improve farm profitability and reduce environmental impact.

A Mackay Sugar-led project will work on the integration of the GIS and NIR technologies including the development of an interface with Mackay sugar, development of functionality within the AgDat application, and the development of the grower web mapping component.

The advantages of electronic consignment include providing in-field mapping of cane constituents at the cane bin level rather than the paddock level. This is done through interfacing the NIR system and accurate determination of harvest location of bins from the GPS monitoring system. There is the potential for this to give valuable information to growers on the actual yields from individual bins within a paddock, which may be used to change on-farm practices to improve productivity, such as variable rate application of chemicals and fertilisers. (SRDC Project Code: **CSR038**)

The Mackay region has recognised the potential of NIR to be used as a measuring technique for cane nutrients, to assist growers in making management decisions, to improve farm profitability and reduce environmental impact.

Improving harvesting-transport-milling logistics

Current manual methods of scheduling road transport and allocating harvesters to loading pads lead to increased costs. This is due to poor utilisation of vehicles and turn around rate of trailers, highly variable day-to-day average distances of travel, variable mill crush rates, and difficulties in providing a reliable service to harvesters on some days.

A transport scheduling and siding (or loading pad) rostering tool was developed by CSIRO to overcome these difficulties through existing value chain projects. The Maryborough mill region needed the integration of these tools under a user-friendly interface/framework so that schedules are produced and adopted on a daily basis.

Programming to supply transport schedules in a user friendly format for cane haulage was successful. The user interface is complete and works with the daily planner and rescheduling versions of the transport optimisation model. The project team conducted scenario planning which showed that the number of vehicles scheduled and average queue time at the mill could be reduced by more than 50 per cent just by optimising a transport schedule that allowed the pooling of hauliers. (SRDC Project Code: **MSF002**)

A project to improve the overall efficiency of the harvest and transport sector of the Mossman sugar industry concluded in 2007. Efficiency improvements were developed through an industry consultation group which looked at a range of payment and harvest management issues. The project assessed three payment options, with a number of growers and harvest contractors changing to a flat rate plus fuel system in 2008.

A group of six cane harvesters had data-loggers fitted to monitor in-field progress and performance. Analysis of this data showed that most in the group were operating within harvest best practice guidelines for a number of performance indicators. (SRDC Project Code: **MAS002**)

Implementing methods for industry adoption

Identification and implementation of appropriate adoption strategies for emerging technologies is a key requirement of research outcomes.

In 2007–08 researchers from CSIRO Sustainable Ecosystems completed a project which resulted in the development of a framework that connected theories from science and technology studies with the participatory development of decision support systems. This framework provides a mechanism for researchers to understand how their technology is more likely to be adopted and applied in practice, and the confidence to engage with a case study group. This creates a more efficient and effective process which in turn can enhance industry activities by better identifying and overcoming delaying obstacles and identifying improved processes for technology development and adoption.

Another important area of outputs and outcomes for the Wet Tropics is the active participation of sugar industry members in the development of technologies and management recommendations for improved application of seasonal climate forecasting, improved irrigation scheduling and reduced environmental impacts of nitrogen fertiliser management. Outputs to better manage limited water supplies (WaterSense) and increase industry preparedness for climate variability (RainForecaster) were developed as part of this project.

The project methodology combined awareness training, action learning and extension activities and was tailored to suit local context. The action learning approach combined acting, observing, reflecting and future planning. This guided the development of the operational plan which consisted of three main stages: understanding (understanding the tool and the processes to achieve adoption), implementation (implementing technology and adoption processes) and refinement (redefining the tool).

Many of the challenges that the sugarcane industry face are complex systems issues and R&D addressing these issues requires the active participation of industry stakeholders. A deeper understanding of processes that contribute to effective engagement between researchers and end-users is therefore essential to deal with the ongoing and evolving complexities of sugarcane systems. Building capacity within the industry to implement lessons from this research could help maximise the impact of complex technologies in the Australian sugarcane industry. This will assist the industry to profit rather than suffer from the complex challenges that it faces. (SRDC Project Code: **CSE009**)

This research developed a framework that provides a mechanism for researchers to understand how their technology is more likely to be adopted and applied in practice.

Improving health and safety

Under Work Place Health & Safety (WH&S) legislation employers are obliged to provide safe premises, safe machinery and substances, safe systems of work, information, instruction, training and supervision, and a suitable working environment and facilities. Failure to comply can result in prosecution and fines.

Understanding and interpreting this legislation is often daunting for business owners. CANEGROWERS took the lead and developed a Safety Management Handbook for the sugarcane growing industry and used an SRDC funded-Travel and Learning Opportunity Project to conduct training and education in the regions.

Project activities included a Safety in Cane seminar at Mackay, a WH&S forum in the Burdekin and a field day at Bundaberg.

Each event had a unique focus, but all had the objective of increasing sugarcane grower

knowledge and awareness of WH&S legislation and provided a forum for growers to discuss issues with industry experts. The project was supported by FarmSafe Queensland, Queensland Transport, Ergon Energy, the Queensland Police Service and Workplace Health and Safety Queensland.

The 120 people who attended were provided with a practical demonstration on hazard identification and risk assessment and acquired information and training on safety procedures at delivery points, operating high-lift machinery near exposed power lines, and the consequences of driver fatigue.

The project team got their message through - Ergon Energy reported a significant drop in the number of electrical safety incidents during the 2007 crushing season (from 54 to 27), a sure sign that this project and others like it offer tangible rewards and benefits. (SRDC Project Code: **CMY001**)

A CANEGROWERS-led TLOP has raised awareness of cane industry WH&S issues. Ergon Energy reported a significant drop in the number of electrical safety incidents during the 2007 crushing season (from 54 to 27), a sure sign that this project and others like it offer tangible rewards and benefits. (Photo courtesy of Ergon Energy)

A new phase of the Farm Health and Safety Joint Venture started in March 2008 to improve the health and safety of workers and their families in the farming industries across Australia. During the year, a toolkit 'Managing Sugarcane Farm Safety' was produced to assist producers in agricultural industries to reduce the risk of injury and illness associated with work on farms. More than 350 toolkits have been distributed across the NSW and QLD sugarcane industries. CANEGROWERS used the kit as a tool at their Workplace Health & Safety Workshops for sugarcane growers. (SRDC Project Code: **OHS003**)



Case study – A regional approach for Mossman

A project that concluded in 2007 helped industry in the Mossman Central Mill area take a regional approach to change. The project had four broad areas of focus:

- Best management practice. Grower self-assessment surveys showed that an extension program developed with growers is paying off. More than half of growers surveyed have changed their row spacing to 1.65m or greater, are fallowing at least some blocks of cane with legumes planted zero-till and are taking soil samples at least once per cane cycle.
- Business Planning. Data collected through this project suggest that approximately 70 per cent of Mossman growers have undertaken some form of business planning.
- Community Engagement. Community and environmental groups were invited to “Sugar Awareness Days” (held in 2003, 2004 and 2007) to meet farming and mill representatives. The format for these days was informal with presentations of cane farming practices and open discussions. This allowed for concerns of the environmental and community groups with cane farming practices to be directly addressed and allowed the cane industry to present their land management practices in a positive manner.
- Harvest and Transport Optimisation. An industry representative group was formed in 2003 to consider measures to improve efficiency in the harvest and transport sector of the Mossman sugar industry. The role of the group was expanded in 2005 to develop an optimum model for the sector in 2010. Activities of this group included trips to Northern Rivers and Mackay areas to discuss reform of the transport sector with industry representatives in those areas. In 2006, following the Northern Rivers trip, the group was instrumental in overseeing the successful introduction of direct road transport of cane to Mossman Central Mill.
(SRDC Project Code: **MAS001**)

Investment Arena: Regional Futures

Indicator	Enhanced resource utilisation in the farming and harvesting sectors
Measure	Implementation of improved farming and harvesting systems that increase revenue and reduce input costs, and concurrently are environmentally and socially sustainable
NRPs	Safeguarding Australia; An environmentally sustainable Australia
RRPs	Biosecurity; Natural resource management; Productivity and adding value

As industry continues to rise to meet the challenges of fluctuating sugar prices, climate variability, disease and demand for alternative land uses the need to enhance the cane supply while maximising returns per unit of costs is essential to achieving profitability and sustainability.

Many elements, including varieties, water and nutrient inputs, pest management and timely operations must be integrated into a workable and robust system which fits industry's needs. A focus on implementation of improved practice is therefore critical to success. This thinking underpins SRDC investments in this Arena Outcome area.

*SRDC is supporting a BSES Limited-led project to develop Incursion Management Plans. This image shows the damage caused by the moth borer *Eldana saccharina* to sugarcane in South Africa.*

Supporting biosecurity planning

SRDC is supporting a BSES-led project which aims to enhance Australia's sugarcane biosecurity measures by updating the industry's Biosecurity Plan to account for recent changes in legislation and in PLANTPLAN (national guidelines covering management and response procedures for emergency plant pest incursions affecting the Australian plant industries), and in light of lessons from the recent smut response. Incursion Management Plans are being developed for downy mildew, Ramu stunt, sugarcane longhorn borer, Eumetopina planthopper, sugarcane thrips and moth borers.

This project will ensure there is an enhanced emergency response capacity towards existing and emerging exotic threats. (SRDC Project Code: **BSS303**)

Helping industry understand and manage the spread of smut

2007–08 marked the second year since the discovery of sugarcane smut on Australia's east coast. Over the last decade, SRDC has supported R&D activities which have increased industry's understanding and preparedness for such a potential disease incursion.

SRDC supports the efforts of the BSES-CSIRO Plant Industry Joint Venture in Sugarcane Improvement (BSES-CSIRO plant breeding joint venture) to increase the level of smut resistance in cane cultivars across all stages of the program.

This is most evident in the crosses made in 2007 – smut-resistant crosses increased to more than half of the total crosses made. The BSES-CSIRO plant breeding program released two new smut-resistant and one intermediate variety in 2008. Seven existing smut resistant varieties will be distributed in regions where they have previously not been grown. Major propagation programs are in place to rapidly multiply the new smut resistant varieties in all areas.

The industry's ability to successfully manage smut relies not only on resistant varieties but also on growers' awareness and understanding of the disease's impacts. A survey of grower awareness of smut in the Herbert and Tully regions found that almost all growers have good knowledge of smut and smut resistant varieties and are actively planting smut resistant varieties.

The final Indonesian smut resistance trial in this project was planted in November 2007 and will be completed in November 2008. The outstanding contribution of the Indonesian Sugar Research Institute (ISRI) to the Australian sugar industry by its professional conduct of smut trials over 10 years was recognised through the presentation of the SRDC Service Award to Irawan, the ISRI Senior Plant Pathologist, during the ASSCT Conference in Townsville in May 2008. (SRDC Project Code: **BSS265**)

Another BSES-led project, which commenced in 2007–08, is focussed on the epidemiology of sugarcane smut. Researchers are gathering information on smut escalation and spread in each district where smut has been identified. Healthy and diseased crops will be monitored



SRDC has invested in a BSES-led project which aims to develop a decision-support tool for growers and advisory staff to assist them to select a balanced mix of varieties that maximises productivity while managing risks from pest and disease outbreaks.

Managing the impacts of smut - the BSES-CSIRO plant breeding joint venture released two new smut-resistant and one intermediate variety in 2008.

to quantify disease spread and escalation in each district. Spread of smut within the three target areas has been comprehensively documented. It is already clear that all farms in a region are likely to be significantly affected within three years of the disease first being detected in the region – faster in the northern parts of the Australian sugar industry. This information will be used to optimise industry transition from susceptible to resistant commercial varieties. (SRDC Project Code: **BSS302**)

SRDC has invested in a BSES-led project which aims to develop a decision-support tool for growers and advisory staff to assist them to select a balanced mix of varieties that maximises productivity while managing risks from pest and disease outbreaks. The web-based program QCANESelect was drafted in 2007–08. A key group of growers is testing the components that are already operational. The system will be fine tuned using their feedback. (SRDC Project Code: **BSS294**)

Giving canegrubs their marching orders

Outbreaks of greyback canegrubs are costly and hard to predict. In 2000–01 an outbreak of this devastating pest cost about \$30 million in lost production.

The inability to predict outbreaks means that huge cane losses are suffered during outbreak years, while control measures (which can cost up to \$400/ha) are used inefficiently during years when the risk of grub attack is low. These factors make it important that growers and their advisors have access to the tools and skills to predict the potential risk of greyback canegrub damage.

GrubPlan - a whole-of-industry initiative driven by BSES, funded by SRDC and supported by CANEGROWERS, ACFA and productivity service organisations - is aimed at helping growers and their advisors understand the biology and behaviour of the pest.

The GrubPlan2 project, which concluded in 2007–08, provided industry with refined greyback canegrub management systems complete with risk assessment and decision-support models that will allow growers and their advisors to proactively manage the pest. Better prediction and management of outbreaks should reduce the severity of canegrub damage and reduce the quantity of insecticides used during periods when control is not needed.



The New South Wales New Farming System Group is working on a project which will provide a structured, strategic approach for improved nutgrass control.

Keeping weeds in check

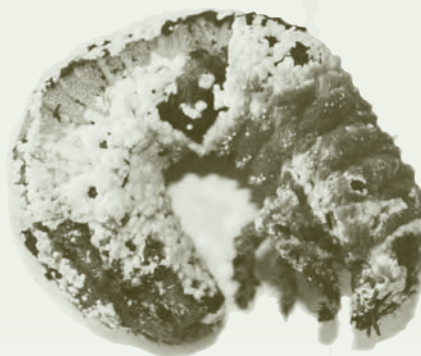
2007–08 marked the start of a project which is targeting nutgrass - a significant weed problem in many cane growing areas and a particular problem for the NSW industry.

Nutgrass seriously competes with newly planted cane. The weed can cause poor germination and reduce subsequent growth of

young cane plant and ratoon crops. The effects are exacerbated by dry soil conditions. The New South Wales New Farming System Group is working on a project which will provide a structured, strategic approach for improved nutgrass control. Trial sites, established using a number of control options, are producing good information. This project should also achieve significant productivity and economic gains for the industry. (SRDC Project Code: **NF5002**)

This project also provided a framework for collecting information required to objectively assess the risk of canegrub attack in individual fields and make rational management decisions. This framework is being put to the test by the Mulgrave CaneGrub Management Group (Cairns) and Mount Kinchant Growers Group (Mackay) as part of two Grower Group Innovation Projects.

These grower-led projects will see the expansion of integrated pest management concepts among cane growers as well as the on-farm assessment of the prediction system and the validation of the regional GrubPlan approach. (SRDC Project Codes: **BSS257, GGP029, GGP030**)



Availability of annual monitoring data means growers can make well informed management decisions which will minimise their losses and result in more efficient regional canegrub control.

Helping growers to embrace improved farming systems

An increasing number of cane growers are embracing reduced tillage, controlled traffic and crop rotation as methods for improving profitability and sustainability. While recognising the economic benefits of implementing new farming systems, industry is also realising the potential for these systems to positively impact on environmental sustainability. SRDC investment in projects specifically aimed at improving understanding of the advantages of the new farming systems is leading to increased adoption rates.

A BSES Limited and Queensland Department of Primary Industries and Fisheries project is coordinating the activities of various farming system projects and providing the technical support to a range of other projects which are also aimed at improving farming systems.

This project reports that adoption rates of improved farming system principles are increasing steadily – about 10 percent of Central and Southern Queensland cane land is now at least partly farmed with the new farming principles. Twenty percent of the cane planted in 2007 in the Mackay area was on 1.8 to 2m row spacing – with projections that twenty percent of *all* cane in the Mackay area will be under the improved farming system by 2012. (SRDC Project Code: **BSS286**)

One finding from this project is that varieties more suited to the new farming system are required. There are anecdotal accounts that some varieties have performed poorly (excessive lodging and subsequent harvester damage) when the new farming system has been used. Another BSES-led project is investigating this issue. While this project is only in the second year of the five-year project it is expected that cultivars with the necessary traits for wider row, minimum tillage farming will be identified. (SRDC Project Code: **BSS296**)

Researchers have found that varieties achieve their final yield via a number of different pathways (eg few thick stalks, many small stalks, rapid growth early in development followed by limited growth in the final months of the crop) and are working on matching those pathways to certain environments.

Case study - Making mill mud application easier

The Maryborough Advanced Grower Group has spent the last two years working on a Grower Group Innovation Project to develop a precision mill mud spreader.

The group is nearing the end of their project and project member Jeff Atkinson said everything has been going smoothly. The focus of their recent work has been to undertake an economic analysis of the trial.

“Mud is such a scarce yet valuable product – the main idea behind this project was to make it go further by getting application rates down,” Jeff said.

“The analysis we did shows that our banded spreader saved over \$6 for each tonne of mill mud when compared to a conventional spreader. We also estimated that over 10.5 hectares there would be savings of \$2600 on fertiliser by applying mill mud,” he said.

Costs included in the conventional system were the transport of mud from the mill, levelling the dumped mud on the paddock and ripping and discing the ground to incorporate the mud. The costs of the system using the mill mud spreader included transport of the mud from the mill, dumping in a stockpile, loading into the spreader and spreading. The mud need not be spread any further once on the ground.

“Now we just have to wait to harvest the trial in September to see how the figures all stack up, but on paper it is all looking really good.

“Down the track it would be great to see the unit fitted to the trucks that bring the mud from the mill. With the unit in place it would be really hard to top this system. And because you wouldn't have to unload and reload the mud you would be able to save so much time.

“We've had a lot of interest in the project, and we've met with growers who have given us feedback that they were impressed with the spreader and the cost savings it could provide.”
(SRDC Project Code: **GGP015**)

Growers joined forces through Grower Group Innovation Projects to test elements of the new farming systems under their local conditions.

The North Coast Grower Group members combined their resources and efforts to develop and implement a new farming system that utilised the bulk of their existing equipment, improved the management of their natural resources and reduced their cost of production.

The group combined the results of their trials to identify a farming system that is sufficiently robust to handle the variations experienced in the North Coast environment (seasonal conditions, soil types, farm layouts and variable equipment) and improve the financial sustainability of the group members.

The group found that different planting techniques (dual row and wide shute) in a controlled traffic situation produced the same

yield. They reported that “when moving to a controlled traffic situation it appears that the planting method does not impact on yield. The grower should use the technique which best suits his farm, machinery and farming style.”

The group also reported that they saw no yield loss in moving to controlled traffic and that there were similar yield results from conventional and controlled traffic systems with three different varieties. Plant and first ratoon trials produced very similar yield and tonnes of sugar per hectare for both conventional and controlled traffic systems. However, costs were lower under the wider row spacing of controlled traffic. (SRDC Project Code: **GGP007**)

BSES is working alongside Mackay growers to help them take the second step of establishing the next crop cycle into permanent beds using limited or no cultivation. This is good news for the environment and growers’ back pockets. The project is focused on reducing cultivation, resulting in reduced soil erosion and improved environmental performance using a ‘bed renovator’. When using the current farming system of full cultivation prior to planting cane, up to \$450/ha is spent on land preparation. This money could be saved if zero till planting can be successfully used; even limited cultivation will provide considerable savings.

A system change-over kit has been produced to help cane growers and extension staff with the adoption of new farming systems. The kit has been designed as a “how to” kit to give growers the information they need to make the transition. Grower surveys conducted as part of this project show that growers believe they have optimised most areas of their farming system, but still have the ability to improve on controlled-traffic systems, as only 20 percent of growers have optimised controlled-traffic systems. More than 70 percent of growers feel that they have the potential to improve on their farming system. (SRDC Project Code: **BSS269**)

Controlled traffic

The New South Wales Sugar Milling Co-operative’s (NSWSMC) move to whole cane harvesting for cogeneration will increase in-field haulout traffic by 30 per cent with the potential for yield decline due to increased soil compaction. As part of a project which concluded in 2007–08 trials were established in all three milling areas of NSW comparing various controlled traffic (1.8 m) row spacing with the conventional 1.5 m configuration.

The results, which indicated the potential for small yield increases, have given growers confidence that they can adopt a controlled traffic farming system without productivity losses.

An economic analysis indicated that by adopting a controlled traffic, reduced tillage, legume fallow system, on a 72ha farm, a grower will improve gross margins by \$12,857 when compared to a conventional system. Variable costs such as fertiliser and fuel are greatly reduced in such a system. GPS guidance systems were evaluated in these trials and as a result the NSW industry has established a GPS base station network, with coverage of all three mill areas. The entire harvesting fleet in Broadwater and Condong have been set up with GPS guidance, with a number of units also set up on growers’ tractors. (SRDC Project Code: **NSC005**)

The development of a ‘bed renovator’ is helping growers save time, money and the environment by reducing the amount of cultivation required before a crop is planted.

The Calen and St Helen Young Farmers Association are investigating the appropriate planting bed shape to match local conditions. As part of their research they hope to improve field efficiencies, reduce cultivation and reduce the wear on machinery by adopting a controlled traffic farming system. (SRDC Project Code: **GGP021**)

Another grower group – this time in North Eton – worked with a local engineering firm to develop an ‘active’ steering system that would allow a haul-out trailer to be steered independently of the tractor. This allows the trailer wheels to follow the wheel tracks of the tractor as it re-enters the field after turning. The Deguara Harvesting Group has found that the unit is effective in reducing compaction (from 20 percent to zero) within the dual row ‘grow zone’ area. (SRDC Project Code: **GGP022**)

An economic analysis indicated that by adopting a controlled traffic, reduced tillage, legume fallow system, on a 72ha farm, a grower will improve gross margins by \$12,857 when compared to a conventional system.

Case study – Harvesting in the controlled traffic farming system (CTFS)

The Singh Harvesting Group, led by Rajinder Singh, believes harvesters should be ‘built to suit the ideal farming system rather than compromising the farming system to suit the harvester.’ This five-member group in the Tableland mill area produce 110,000 tonnes annually and is experimenting with various width planting options including 2 metre dual rows to make the transition to the CTFS. Knowing that harvesting is the single largest cost for growers, the group are designing a low-cost integrated modification system for harvester manufacturers.

A 2005 Caseco 3510 harvester was transported from Mareeba to Mackay and EHS Manufacturing built a wider basecutter box; widened the main frame forward of the basecutters; and modified the steering components, crop divider mounts, rollers and hydraulic components.

The transformed machine harvested 106,000 tonnes in 1.5 – 1.8 metre single rows in 2006 with ‘excellent’ results. In the last year of the project, the group has ‘tweaked’ the harvester to increase the back wheel spacers, incorporate the Plane Creek elevator extension, modify the topper gatherer discs and change the haul-out wheel spacings to two metres.

Despite initial reservations, there are a number of growers who see the gains of the CTFS two-metre system are greater than the initial harvester costs. This group’s results will encourage other growers to change and create a demand that will justify changes by harvester manufacturers at the factory—the most cost effective and preferred outcome. (SRDC Project Code: **GGP026**)

Break cropping as an alternative income

As well as delivering significant soil health and environmental benefits, growing other crops in rotation with sugarcane also provides an alternative source of income for growers.

A group of Bundaberg growers is undertaking trials in two Grower Group Innovation Projects using peanuts as a rotation crop for cane.

The Sustainable Sugar and Peanut Agriculture (SSPag) group are growing peanuts in an uncultivated cane trash blanket and discovered early on that the level of trash thickness had an impact on germination. If the trash blanket is too thick, the planter pushes the trash into the soil – insulating the seed from the soil.

The group is finding that the advantages of growing peanuts in the cane off-season include lower land preparation costs, less irrigation and erosion and improvements to soil health. The group also report getting up to 150 tonnes/hectare from the cane without fertiliser, because of the nitrogen introduced into the soil from the peanut crop. (SRDC Project Codes: **GGP028** and **GGP040**)

Also investigating the suitability of peanuts as a break crop, the Blackburn Harvesting Group has found that they were able to increase their gross margin by over \$1500 per hectare compared with traditional bare fallow. (SRDC Project Code: **GGP023**)

The Mackay Fibre Producers are working on a GGIP to investigate the feasibility of improving the profitability, sustainability, and robustness of the sugar industry in the Central region through the incorporation of fibre rotation crops. The group is investigating the production and processing systems of kenaf and other fibre crops in the central region.

In 2007–08 the group were successful in attracting a Regional and Community Project that enabled the grower group to enter into the first commercial arrangement from its fibre production in rotation with sugar cane. This project will supply funding for equipment required to produce a garden mulch product as well as equipment to produce and store seed. (SRDC Project Code: **GGP024**)



The Sustainable Sugar and Peanut Agriculture Group is investigating how to best grow peanuts in an uncultivated cane trash blanket.

In the Childers area, an Isis Target 100-led project generated information about possible break crops suitable for the specific seasonal climatic conditions at Isis and the market access and opportunities to sell these crops, including grains and legumes. Since the discovery of sugarcane smut in the district in June 2006 the value of this study has become even greater. The expected requirement that smut infected cane blocks with significant smut infection are to be fallowed with a bare fallow or non-host crop creates a need for sound information on alternative crops that can be grown in the region. Early feedback indicates that more growers will be growing fallow crops than in previous years. Whilst soybeans are an obvious crop for many growers, the study provided individual growers, and the district as a whole, with a user-friendly resource to identify other fallow crops that may be suitable.

The majority of growers now see themselves as serious 'soybean/grain growers' who intend to harvest their crop for grain rather than being a cane farmer who "throws in a few beans". (SRDC Project Code: **CG009**)

In late 2007 the CSIRO announced the release of another new soybean variety, 'Fraser', suited to the Fraser coast region of Queensland. Fraser was developed with support from SRDC. Fraser matures about the same time as existing varieties, but has higher grain yields and higher biomass production, making it ideal as a rotation crop for sugarcane. It has excellent grain quality with high protein content, a clear hilum and is suitable for the feed and oilseed crushing markets. With diversification often being the key to increased profit, this type of research, which has given many sugarcane growers another income option, is paramount for industry development. (SRDC Project Code: **CPI009**)

The Mackay Fibre Producers harvested and hauled almost 30 hectares of kenaf using three different options—traditional cane harvesting, round baling and forage harvesting—without any major issues. As this picture shows - harvesting fibre crops with conventional sugarcane harvesting equipment is definitely achievable.



Putting the precision in agriculture

SRDC is working with researchers from CSIRO, BSES Limited, Productivity Service Companies and the National Centre for Engineering in Agriculture (NCEA) to provide a coordinated approach to research into precision agriculture options for the sugar industry. By adopting and encouraging a collaborative approach SRDC hopes to provide the next step for the industry to capitalise on the advances offered by new farming systems.

SRDC commissioned research which reviewed and analysed technologies that are applicable to sugarcane farming and harvesting. The findings and recommendations of this research were published in an SRDC Technical Report: 3/2007 'Precision agriculture options for the Australian sugarcane industry' which was launched in November 2007. (SRDC Project Codes: **CSE018**, **NCA009** and **SRD012**)

A project which started in 2007–08 will develop and promote techniques for establishing zones for targeted application of best management practices within cane paddocks. The zones will be identified by mapping features in satellite imagery, soil electromagnetic induction (EM) responses, actual soil properties, and sugarcane yields. They will be assigned latitudes and longitudes and viewed, queried, and analysed at various scales in a geographic information

system that will integrate data collected from different sites and at different times. The resulting maps will allow the subsequent development and promotion of variable rate, site-specific, best management practices for sugarcane production and environmental stewardship. (SRDC Project Code: **BPS001**)

An SRDC-funded Travel and Learning Opportunity Project allowed two extension officers and four cane growers attend the Australian Annual Control Traffic and Precision Ag Conference in 2007. Adopting major change in any circumstance is challenging, especially when large investment in capital is required. Understanding as many of the facts as possible will make this change more realistic. Three of the four growers who attended the conference are moving into a controlled-traffic system and are utilising precision agriculture principles and elements. These growers are sharing their ideas and experiences and are having a positive impact on other growers who are in the process of adopting this new technology. (SRDC Project Code: **BSS312**)

SRDC Chair Ian Knop joins Isis Mill Chairman Gavin Petersen to launch an SRDC report into options for the Australian sugarcane industry to capitalise on precision agriculture technologies.




Managing and improving soil resources

Soil health remains an important factor in maintaining high sugarcane yields and productivity. A University of Queensland-led project is investigating the impact of different sugarcane management options (N fertilisation, trash blanketing, legume intercrop, tillage) on soil biology and the availability and distribution of soil nutrients in the upper soil profile. The molecular markers being investigated in this project could become an important diagnostic tool to help growers achieve healthier soils by understanding the desired microbial conditions for improved soil health and nutrient cycling. (SRDC Project Code: **UQ043**)

Supporting best-practice nutrient management

Throughout 2007–08 SRDC supported projects that will assist the industry counter the rising costs of fertiliser and the increasing need to demonstrate environmental sustainability. SRDC encourages collaboration to ensure its investments in this area are optimised and facilitates an annual industry workshop to promote improved nutrient management.

The overall objective of a CSIRO Sustainable Ecosystems project is to reduce nitrogen fertiliser applications on sugarcane farms, to decrease production costs and abate N losses to the environment, by developing and implementing the ‘replacement concept’ of N management. This will be achieved by



Cane farmers will soon be able to improve the health of their soils by understanding the desired microbial conditions for improved soil health and nutrient cycling.

better defining the amount of N 'lost' through harvested cane, trash burning and unavoidable environmental losses in different regions (from the wet tropics to NSW), under different conditions (e.g., irrigation and dryland) and different farm management practices (e.g. N source, N application technique).

The project is working on developing methods for accounting for N contributions to sugarcane from organic sources, such as mill mud or fallow legumes. The project team hopes to deliver economic and environmental returns to the industry by defining benchmarks for the amount of N needed for sustainable sugarcane production. (SRDC Project Code: **CSE011**)

A BSES-led project seeks to improve on-farm profitability reducing fertiliser costs by up to \$60/ha or 65 c/t of cane and ensure greater environmental accountability and responsibility. The SIX EASY STEPS program is aimed at the adoption of sustainable nutrient management on-farm. This approach recognises that nutrient management should be based on an understanding of soils and the nutrient processes and losses that occur within the soils.

The development of a Soil Capability and Management Package (SCAMP) as part of this project has been an important step in the overall process of growers (and their advisers) knowing and understanding their soils. The continuing replicated demonstration strip trials (especially those that have now been harvested for two seasons) are producing important results. Despite often lower N and P applications, yields are generally being maintained, but with calculated gross margins often in favour of the SIX EASY STEPS approach. In some cases, increases in CCS values with the SIX EASY STEPS approach are contributing to gross margins in excess of those expected from lower input costs only. This is an encouraging trend. (SRDC Project Code: **BSS268**)

Managing water more sustainably

Growers, researchers, industry organisations and advisors are working together to tackle water issues in the Burdekin. One project is building grower capacity to understand and better manage groundwater. Through this project the Burdekin Bowen Integrated Floodplain Management Advisory Committee (BBIFMAC) are improving the communication between growers, researchers and organisations including the Department of Natural Resources and Water and SunWater. Growers have been trained in the use of lysimeters and piezometers and the data they capture are forwarded to the groundwater consultants for use in the groundwater model they are developing for the project.

This computer model, developed in 2007–08, can be used to predict the effect on groundwater levels of changing land uses, irrigation practices and groundwater pumping strategies. This will help to formulate recommendations for improving the management of irrigation and groundwater in the project area. This project will be an important source of information on the various sources that contribute to rising groundwater (e.g. leaking channels and tailwater dams, furrow irrigation). (SRDC Project Code: **BBF001**)

Growers in the Herbert are taking ownership of monitoring water quality from their own farms, thanks to a CANEGROWERS-led project which is giving them new skills and tools. It is expected that the simple water quality monitoring tests performed by growers will have a positive environmental impact. This project is improving understanding by land holders of the relationship between land management practices and water quality. Project participants are improving on-farm activities such as harvesting practices and the use of herbicides, pesticides and nutrients, and expect to see improvements in the quality of water leaving the sugarcane farming area. (SRDC Project Code: **CG013**)

A wetland constructed in northern New South Wales is successfully reducing discharge of toxic materials and acidity in drainage water. Discharge of water with low pH and containing metal complexes has in the past impacted on the health of rivers. As a step to ensuring that the water draining from cane farms is free from contaminants, researchers from the University of New South Wales and Australian National University have worked with local grower Robert Quirk as part of an SRDC-funded project to install an artificial wetland on a site near McLeods Creek that flows into the Tweed River.

Following heavy rains in January and February 2008 researchers recorded a significant increase in pH, and the oxidation of metal complexes – a result that indicates the wetland is an efficient filter. Pesticide residues, if present in the wetland system, are below the level of detection. The constructed wetland is getting considerable publicity as evidenced by the considerable number of people visiting the site. (SRDC Project Code: **UNW003**)

Project participants are improving on-farm activities such as harvesting practices and the use of herbicides, pesticides and nutrients, and expect to see improvements in the quality of water leaving the sugarcane farming area.

A BSES and CSIRO Sustainable Ecosystems-led project is facilitating grower uptake of irrigation and scheduling tools, including WaterSense. The second irrigation season using WaterSense scheduling was disrupted by regular summer rainfall – and in some areas widespread flooding. Monitoring occurred mainly in the latter part of the season. The efficiency of WaterSense as an aid to water management in unstable weather conditions was demonstrated on many occasions. The ability of WaterSense to provide accurate prediction of water use, irrigation requirements, identification of inefficient practices, problem alerts and corrective strategies will assist growers and their advisors with priority setting, development of skills in optimising water resources and support of best management practice principles that result in more efficient use of the available water resource. (SRDC Project Code: **BSS297**)

WaterSense (a tool which provides information to growers and their advisors) will result in more efficient use of the available water resource.

Case study - Learning about farmer-friendly EMS

Robert Quirk, a northern New South Wales cane farmer, is a strong advocate of environmental management systems (EMS) for the sugarcane industry. His Travel and Learning Opportunity Project set out to introduce a farmer-friendly EMS, pioneered by the Blackwood Basin Group in Western Australia, to sugar industry participants in New South Wales.

A driving factor behind his involvement in the project is his feeling of responsibility towards the community and the environment for the impact his own farm has on the local catchment.

Two facilitators from BestFarms, Western Australia travelled to Ballina and Brisbane to present their EMS. BestFarms Environmental Management Systems has been recognised with a 2007 Australian Business Award for Environmental Responsibility.

The workshop gave everyone present the opportunity to test the EMS for their specific situations and establish its capabilities and ease of use.

Following the impressive demonstration, the New South Wales sugar industry has linked with the Northern Rivers Catchment Management Authority, Richmond River Landcare and the local horticultural industry to successfully apply for funding through the Department of Agriculture, Forestry and Fisheries to deliver the BestFarms EMS throughout the Northern Rivers New South Wales region.

The first two workshops were held in 2007 and 20 land managers across the region now have a working EMS—proving that the initial TLOP investment by SRDC was a worthwhile step towards a much larger initiative. (SRDC Project Code: **NCT001**)



An SRDC funded TLOP helped NSW grower Robert Quirk (centre) create awareness of environmental management systems in New South Wales.

Improving farm business and risk management decision-making

Researchers involved with the Department of Primary Industries and Fisheries-led project to help growers understand the economics of their farming system report that the FEAT (Farm Economic Analysis Tool) package developed as part of their work is so easy to use that some farmers are buying a computer for the first time so they can continue using the tools.

The FEAT was designed specifically for cane farmers and has been widely distributed throughout the cane industry. More than 180 growers and advisors have been trained in the use of FEAT through this project.

Evaluation of survey results gathered in the project indicate that growers now place more of an emphasis on using economics as part of their decision making process. The results also suggest that the economic knowledge base of those surveyed has improved with a greater understanding of economics terms, machinery costs and use of the FEAT program as a planning tool.

FEAT is also changing the way growers manage their business. Results of surveys undertaken as part of this project show that in 2008 almost 80 percent of respondents knew their machinery costs, compared with less than 20 percent just three years earlier. In 2008, half of the respondents document their farm management records electronically, compared to just 20 percent three years earlier. In 2008, most respondents said they used return on investment as the key to determining their financial success. In 2005 this factor was ranked in the bottom half of responses.

Using FEAT growers are able to evaluate the economic impacts of implementing changes to their farming operations. Once the economic, environmental and social benefits are demonstrated, farmers are more likely to adopt the practices and planting contractors are more likely to invest in the required equipment. (SRDC Project Code: **DPI015**)

Much of the economic information presented in this Annual Report (especially for GGIPs) has been calculated using the FEAT package.

Implementing better harvesting systems

Harvester operators must find a balance between costs of operation and minimising loss and damage, thus maximising future harvests. Harvesting contractors are generally paid per tonne delivered to the transport pick-up point, thus for economic reasons poorer crops are cut at the fastest possible speed. A BSES-led project aimed to quantify the impact of knockdown and basecutter damage on crop yield by following the full crop cycle to provide a more complete basis for economic incentives for Harvesting Best Practice (HBP).

An adaptive on-the-go control system, designed to enable variable speed control of the crop-handling components during the harvest operation, was developed to reduce damage and losses and improve ratoons. This system ensures that the cane harvester maintains a consistent feed-rate and optimum performance by enabling automatic matching of crop-handling component speeds with ground speed to compensate for variations in the crop. This introduces a completely new dimension of sophistication into the world of cane harvesting, bringing it into line with many other agricultural harvesters and offering benefits across the value-chain for field and factory productivity through HBP and quality/quantity of the cane supply. (SRDC Project Code: **BSS270**)

Investment Arena: Regional Futures

Indicator	Enhanced processes and product range in the transport, milling and marketing sectors
Measure	Implementation of more productive and cost-effective transport, milling and marketing systems in harmony with the environment and societal expectations
NRPs	Promoting and maintaining good health; Using frontier technologies for building and transforming Australian industries
RRPs	Productivity and adding value; Supply chain and markets

Enhancing cost-efficiency in transport and milling systems

Through an SRDC-funded project Tully Sugar is working with researchers from SRI (QUT) to improve the management of scale formation and removal in their evaporator system. The project will result in an improved factory processing rate through a reduction in lost time for maintenance required to clean the evaporator vessels during the cane crushing season. This will offer opportunities for increased cane crushing and sugar production with the same installed factory capacity. It will improve utilisation of installed assets and also reduce operating costs. (SRDC Project Code: **TSL001**)

New value-added opportunities

Tully Sugar is partnering with SRI (QUT) to look for ways to capitalise on mill mud and ash production by pelletising and turning it into a commercial fertiliser.

There will be financial and environmental savings, and the possibility of a new source of income, if the production of a complete pelletised fertiliser product based on mill mud and ash (and possibly other nutrients) is technically and economically feasible. Reducing the high moisture content of mill mud is something that researchers are currently addressing. The ideal moisture content for pelletising operations is about 20 per cent, but there is a cost in getting mud and ash this dry. Early analysis suggests that there could be a market for the pelletised mill mud not just with the sugarcane industry, but also within the banana industry and other local producers. (SRDC Project Code: **TSL002**)

Improving the effectiveness of mud filtration

Since 2006 SRI (QUT) have been trialling two different types of filters to improve the cost-effectiveness of mud filtration. Two alternative types of press were installed and tested at the Broadwater Mill in NSW. Thanks to the technology, the team were able to achieve dry cakes with equipment costs significantly below the standard rotary vacuum filters currently in use in Australian sugar mills.

The project team were able to produce cake with a moisture content ranging from 50 to 60 per cent compared to the typical 75 to 80 per cent. The reduction in moisture content of the filter cake will mean cheaper transportation costs, with savings estimated for an average sized factory of \$100,000 per season. The reduced transportation costs should lead to reduced accumulation of heavy metals in the cane fields near the mill as the drier filter cake can be transported more economically to more distant fields. (SRDC Project Code: **QUT012**)

Investment Arena: Emerging Technologies

Indicator	Enhanced approaches for sugarcane genetic improvement
Measure	Technologies developed that accelerate the delivery of improved varieties for sugar production and value-added products
NRPs	Using frontier technologies for building and transforming Australian industries
RRPs	Technology

Diagnostic technologies for genetic screening

SRDC is investing in a BSES-led project that will develop and implement new predictive tools for varietal selection against smut and Fiji leaf gall. These tools will improve the delivery of resistant varieties in shorter timeframes, and reduce the cost of varietal selection. This research is building upon existing proof-of-concept research that has demonstrated that varietal resistance to smut and Fiji leaf gall can be correlated with near infrared (NIR) spectroscopic measurements. Researchers hope to be able to devise a total on-farm or on-station application for implementation within the BSES-CSIRO Plant Industry Joint Venture in Sugarcane Improvement (BSES-CSIRO variety improvement program) to deliver significant efficiency gains and cost reductions over traditional screening methods. (SRDC Project Code: **BSS307**)

Improved breeding systems to accelerate genetic gain and delivery of new varieties

Efficient use of water is becoming a major determinant of irrigated and non-irrigated sugarcane production in Australia. About 60 per cent of Australian sugarcane production is irrigated. Recurring drought is a major factor affecting sugarcane crop productivity. A recent economic analysis showed that water stress is costing the industry an average \$261 million per annum. With such a large economic loss and the prospect of increasing cost of water in the very near future, efficient use of water for crop production is an imperative. Crop response to water stress will also limit cost-

effective expansion of sugarcane cultivation in the future. Water use efficient and drought tolerant cultivars could contribute to a more profitable, stable and sustainable sugar industry. Improving cane productivity under water-limited conditions is now being addressed by a BSES-led project which is seeking to determine and exploit the opportunities now available to address this increasingly important issue. The establishment of two trial crops in the first year of this project has laid a good foundation for the exploration of targeted plant improvement. Initial measurements indicated promising variability in some useful physiological traits. (SRDC Project Code: **BSS305**)

A CSIRO-led project is focused on increasing sugar yield through increased CCS and cane yield by capitalising on better understanding of the interactions between genetics and management. This research is developing a better understanding of factors that influence how sugarcane produces, transports and stores sucrose and fibre. This knowledge will be used to develop irrigation strategies which prevent lodging and maximise CCS, and promote better management practices for maximising sugar yield and reducing water use. Work is being conducted in the field in the Burdekin and at the CSIRO Davies Laboratory in Townsville. A simple model based on photosynthesis, plant extension rate and stalk number was able to substantially account for sucrose accumulation. The modelling work will be expanded over the remainder of the project with input from Dr Abraham Singels, a visiting fellow from the South African Sugar Research Institute. (SRDC Project Code: **CSE014**)

The principal aim of a BSES-led project which concluded in 2007–08 was to develop and implement a new genetic evaluation system (GES) with the objective of maximising the economic return for the Australian sugarcane industry through genetic improvement. An optimal GES is the backbone of any breeding program because maximising genetic gains is primarily a matter of efficient selection. A GES provides information to breeders about which individuals should be selected as parents for crossing and which ones should be selected for commercial production.

At the commencement of this project, selection of both parents and clones for commercial production was principally based on the index known as net merit grade (NMG). NMG is based on the performance of a test clone (or a cross) relative to the average of a number of commercial varieties (or crosses) for the traits of commercial cane sugar, tonnes of cane per hectare, appearance grade and fibre content. The new system was developed to define breeding objectives and predict breeding and genetic values for traits associated with the selection criteria for each breeding objective.

The improved GES has now been implemented in the BSES-CSIRO variety improvement program and was used to select parental clones for 2008 crossing. It was also used in all regional selection programs in 2007 to make selection decisions, using variety data files generated from GES. It is expected that the implementation of the new system will help to breed the varieties the industry needs as well as breeding to maximise economic return for the whole industry. (SRDC Project Code: **BSS267**)

CRC SIIB looks to the future of Australian sugarcane

The Cooperative Research Centre for Sugar Industry Innovation through Biotechnology (CRC SIIB) has continued to make good progress. The CRC SIIB's new portfolio of projects are organised under four programs: Enhanced sugarcane farming systems; New product development from sugarcane; Education; and Technology Transfer. These are designed to further the CRC's ultimate goal, which is to create opportunities that add significant commercial value to the Australian sugarcane industry.

The following gives insight into the CRC's research achievements during the past financial year.

New gene mapping tool

In June 2008, the CRC SIIB and Diversity Arrays Technology Pty Ltd commercially released the world-first sugarcane genotyping service, Diversity Arrays Technology (DART), for use by the Australian sugarcane industry.

DART is a DNA mapping tool widely used by plant breeders of wheat and barley. However, largely due to the complex genome of sugarcane, sugarcane breeders across the globe have been hindered in their application of molecular marker systems for rapid genetic improvement of sugarcane. The availability of DART breaks through this barrier with a cost effective and efficient solution.

BSES Limited/CSIRO Joint Venture leaders have stated that DART will form an integral part of the Joint Venture's ongoing efforts to provide the Australian sugarcane industry with one of the most innovative sugarcane breeding programs in the world.

In a nutshell:

- DArT is fast and cost effective and enables breeders to select for several traits at one time.
- The technology is poised to help the BSES-CSIRO breeding program discover how to enhance and significantly 'speed up' the development of genetically improved varieties with specific, sought-after traits, such as resistance to diseases, or high sugar content.
- DArT will be applied on a commercial scale in the BSES-CSIRO sugarcane breeding program in 2008.

Bio-plastics research

Research by the CRC SIIB into the production of PHA's (polyhydroxy alkanoates - a class of biodegradable plastics) in sugarcane continued during the 2007/08 financial year.

PHA's are a type of bio-plastic with many applications. For example, a car company might take a PHA that has been purified out of sugarcane for example, process the PHA's by mixing them with fibrous components from either this crop or another crop to make door panels, or to make clear plastic covers that go over your lights or a whole range of plastic seat covers all of those components that go into an automobile.

The CRC team is working on increasing the levels of PHA in sugarcane leaves. To date, scientists have successfully developed cane with 3.5% PHA, and established PC2 glasshouse trials at the BSES Limited Woodford Station. Currently they are investigating what inhibits PHA production and then aiming for levels of 7 to 15% PHA.

American company, Metabolix Inc, has invested in our bio-plastics research. Metabolix is a major American manufacturer of bio-industrial products with the aim to use biotechnology to develop environmentally sustainable alternatives to the numerous petrochemical materials and processes now used for many products essential to our quality of life.

Understanding how sugarcane reproduces

An important component of the CRC's work is to investigate the likely impacts of growing GM sugarcane in the field.

While sugarcane generally reproduces vegetatively, this is not always the case. Sugarcane can also reproduce from seed. In 2007, CRC SIIB researchers established a project to find out whether, if a genetically modified (GM) sugarcane variety was planted next to non-GM crops or wild sugarcane, it could accidentally pollinate them or introduce its genes through a stray vegetative bud.

To date, one aspect of the study has found that sugarcane seed germinates best at 36°C in the laboratory. However, in most sugarcane growing areas, temperatures are lower, so germination is much less. CRC researchers expect germinating conditions to be even less favourable in sugarcane fields because the seeds dry out, are eaten by seed eaters or if they do germinate, have to compete with other plants.

More needs to be known before results can be sent to the OGTR for assessment or before they are able to contribute to strategies for the safe release of approved plants.

**Note: the job of assessing the likelihood of GM plants spreading to the environment and possible impacts on human health falls to the government regulator, the Office of the Gene Technology Regulator (OGTR). OGTR decides whether or not to introduce a GM variety.*

Producing nitrogen efficient cane

In the past year, the Australian sugarcane industry has seen prices of nitrogen sky rocket. Combined with continued speculation regarding the overuse of nitrogen and its effects on waterways, it has become more urgent for the industry to find alternatives.

Research by the CRC SIIB has continued to reveal how the sugarcane plant uses nitrogen or N fertiliser to make protein and grow. Importantly, they are trying to identify the gene responsible for efficient nitrogen intake. It is envisaged this type of information will help plant breeders develop sugarcane varieties that require low levels of nitrogen to produce high levels of sugar.

Sugarcane proves to be preferred feedstock

In an environmental life cycle assessment completed in June 2008 (comparing Australian sugarcane with US corn and UK sugar beet), the CRC SIIB found that sugarcane is a preferred feedstock for the production of bio-products.

The research revealed that the main advantages of sugarcane include its high sugar yields and the displacement of fossil fuels with surplus renewable energy from cane fibre (bagasse). When compared with corn and sugar beet, these advantages lead to lower fossil energy input, greenhouse gas emissions and possibly less acidification potential per unit of bio-product.

The environmental advantages can be delivered by crops that can provide high yields, use nitrogen efficiently with minimal loss to the environment and produce by-products that displace high-impact commodities which are likely to have a larger environment footprint. The main opportunities for further improving

cane's relative environmental performance are precise management of nitrogen and improved water use efficiency.

It is hoped that results from this report will **provide the Australian sugarcane industry with an insight into** sugarcane diversification opportunities.

Education meets forecast

The CRC SIIB has continued to play a fundamental role in the education and training of first-class biotechnologists. To date, the Centre is on track to qualify 34 young professionals in this area, the target number of students as set out in the CRC SIIB contract.

Educating school children about biotechnology

In June 2007, the CRC SIIB undertook a biotechnology education research project. The first of its kind in Australia, 'Biotechnology in Schools' is taking a three-pronged approach to examining how best to teach and assess biotechnology concepts in the middle and senior school years. The project made significant progress during the 2007/08 year.

Fundamentally, 'Biotechnology in Schools' involves transferring knowledge to students through active learning. Additionally, it is assessing student-parent interaction, and the development of links between teachers and scientists.

A senior school component aims to increase a group of Year 11 students' understanding of the properties and applications of biomaterials through digital problem-based learning scenarios. A middle school component is giving students the opportunity to explore the issue of GM crops in Australia.

The research team is also working with teachers to develop students' scientific literacy and look at how they can successfully transfer understanding of this 'new' information to the parent community.

The CRC SIIB plans to use outcomes from the project to inform the development of teaching resources and learning strategies that support students' understanding of biotechnology, in particular, sugarcane biotechnology.

Continued commercialisation processes

During 2007/08 the CRC successfully commenced commercialising patented technologies and initiated patent positions on a number of other outputs of the CRC project investments. While each of these brings only minor returns to the CRC IP Company, they are significant outcomes for the CRC and its staff.

The research and development portfolio for the second half of the CRC sees a continuing focus on the development of deliverables as per the CRC's targets. Several original projects have not been continued and all the continuing projects are being managed to ensure commercial issues are a significant component of the ongoing research.



Investment Arena: Emerging Technologies

Indicator	Enhanced technological innovation across the sugarcane industry
Measure	Technologies developed that improve business performance across different sectors of the sugarcane industry
NRPs	Using frontier technologies for building and transforming Australian industries
RRPs	Technology

Improved farming technologies

Competition from weeds (mainly grasses) in sugarcane can cause significant loss in yield and potentially reduce the length of the crop cycle. Control methods typically comprise costly herbicides which only control grasses at pre-emergence or seedling stages and require precise weather conditions to work effectively. Alternative control strategies include manually spot spraying clumps of grass and conventional tillage operations, both of which are becoming increasingly less economical. As the sugar industry moves towards minimum tillage farming systems to reduce the cost of farming and improve soil health, it is becoming more dependent on herbicides. The National Centre for Engineering in Agriculture is developing precision spray technology that targets specific weeds. The technology has the potential to revolutionise weed management by reducing herbicide usage while reinforcing minimum tillage concepts. (SRDC Project Code: **NCA010**)

Improved harvesting technologies

The objective of this project is to control harvester and haul-out progression during harvest using real time kinematic (RTK) technology. RTK technology offers even greater precision than GPS systems and when combined with “wireless” communication will enable both machines to operate along a specified line in parallel. It will also enable the harvester to control the position and forward speed of the haul-out during harvest. The project team will control the forward progression of the harvester based on the crop size and ‘load’ being sensed, therefore optimising harvester capacity to maximise throughput per hour. The development of this communication from machine to machine in real time could open even more possibilities for advances in this area. (SRDC Project Code: **GRF001**)



A ‘hands-free’ approach – RTK technology offers greater precision in harvesting operations.

Improved processing technologies

The overall objective of research being undertaken by SRI (QUT) and Proserpine Sugar Milling Cooperative is to identify high value products that can be recovered from hydrolysed bagasse, the residue after furfural production. This project could be the catalyst of a new income stream and increase the revenue of furfural production estimated at \$8 million per annum, which will have direct economic benefit to cane producers and the community. This in turn will increase confidence in sugarcane production which could lead to increased vertical and horizontal expansion by growers. Increased tonnages and increased season length will also benefit the harvesting sector through improved utilisation of capital. The research could also help to deliver environmental benefit on a global scale by supplying products derived from sustainable and renewable resources, and replacing those currently obtained from crude oil. (SRDC Project Code: **QUT016**)

Research is underway to identify high value products that can be recovered from hydrolysed bagasse, the residue after furfural production.

Another SRI (QUT) project is assessing the technical and economic feasibility of alternative technologies for furfural production. This research involves the pilot-scale trial and optimisation of a new environmentally friendly flash pyrolysis process (developed in Australia by the CRC for Wood Innovations) using bagasse and field trash as feedstocks. Residues from this process will also be examined to determine possible value-adding opportunities which could lead to the co-production of lignin-based commodities (which replace hydrocarbon-based commodities) and a cellulose-derived fermentation feedstock (which can be utilised to produce ethanol). (SRDC Project Code: **QUT015**)

This project could be the catalyst of a new income stream and increase the revenue of furfural production estimated at \$8 million per annum.

Investment Arena: People Development

Indicator	Enhanced effectiveness of individuals contributing to the sugarcane industry
Measure	Demonstration of improved capability and capacity of sugarcane industry participants to learn, change, collaborate, lead and innovate to advance the sugarcane industry
NRPs	Using frontier technologies for building and transforming Australian industries
RRPs	Innovation skills

Improved capability for leadership

Six of the industry's future leaders and decision makers were put through their paces as part of the Leading Industries' Advance in Sugar Program.

During the intense six month program participants had the opportunity to invest in their personal development, team work and professional development. Graduates represented production, milling, research and extension and each completed a project which will contribute to the efficiency, professionalism and sustainability of the industry.

Each participant completed a project as part of the program. Project topics were diverse, but addressed a need within the industry. The projects ranged from researching new farming system based on skip row planting, establishing a Future Farmers group, organising an innovation forum, developing quarantine guidelines for the movement of micro-propagated sugarcane plantlets across state borders, establishing a community based training model for the sugar industry, lobbying for the relocation of power supply structures on farms, to installing more effective irrigation systems to be installed. (SRDC Project Code: **LDI001**)

Supporting the industry's women

In recognition of the valuable role of women in the Australian sugarcane industry, SRDC invested in a number of projects which focussed on enhancing their skills and abilities.

The 'Where are the women?' project actively supported women right along the sugar industry value chain. It concluded in 2007–08, and has supported 35 women in their pursuit of greater recognition within the industry.

More than 180 women participated in 'Here Come the Women' showcase events in 2006 and 2008 which highlighted the achievements of women in sugar towns. Attendees were kept informed about industry events and successful sugar industry women through regular newsletters.

As part of this project a group of eight influential people in the industry held a half-day workshop coached by a mentoring expert. The master class was a discussion-led learning workshop exploring mentoring experiences, and considering the different types of mentoring.

The project offered targeted funding allocations to individuals and groups of women to address a particular skills shortage or attend specific capacity building opportunities. Funding was also available to create opportunities or events that may not have been offered to the women of the sugar industry value chain before.



The Hon Tony Burke Minister for Agriculture, Fisheries and Forestry (centre) congratulates graduates of the Advance in Sugar program.

The project supported activities that led to employment for women within the industry. The skills shortage which has seen many leave the sugarcane industry for employment in more lucrative industries presented women with an opportunity. From 12 women who completed a Harvest Haul-out pilot course, funded through this project, six were immediately employed in the industry. Meanwhile the Training in Communities - Women in Sugar Towns (TIC) program focused on coaching women in CV writing, grooming, presentation and interview skills. (SRDC Project Code: **CGH001**)

Another project resulted in a record number of women standing for election to leadership positions in regional CANEGROWERS companies. Out of the seven nominees, four were elected. While the CANEGROWERS elections were a key focus for the project, participants were encouraged to nominate for other leadership positions and at least one participant stood successfully for election for the board of the Tully Mill.

A second outcome from the project has been the participation of women in leadership training events and regional strategic planning activities. Women are now visible within the CANEGROWERS organisation and in industry publications. There is growing trust and commitment to working together over the long term, and through the various leadership programs formal links are being enhanced between the Women in Sugar groups and the organisation CANEGROWERS. (SRDC Project Code: **CMC001**)

Improved capacity to change, learn and innovate

In 2007–08 over 350 members of the Australian sugarcane industry had the chance to get off the farm, get away from the office, or hang up their lab coats thanks to SRDC's investments in Travel and Learning Opportunity Projects.

Participating growers, millers and researchers travelled to other sugar producing regions and attended conferences to learn from their peers and share ideas.

The projects were about helping members of the sugarcane industry to think outside the square and to find out about the latest thinking in their field.

Outcomes from these projects have been reported throughout this report. Some comments received from project participants on the overall effectiveness of the TLOP program include:

- "It's like a professional shot in the arm."
- "It's about having a first hand experience."
- "It really broadened the minds of some relatively conservative people by getting them out of their own areas, exposed to different things."
- "Look at something in particular and then ask questions about absolutely everything that you see."
- "The networking is a key benefit – I've kept in contact with people we met to discuss other issues that have arisen since the TLOP."

Case study - Growers GIVE it all they've got

Organisers of GIVE 08—the sugarcane industry's premier expo event—are pretty sure the people who took part in GIVE 08 were so enthused about what they experienced that they were happy to tell others all about it.

GIVE (Grower Innovation Virtual Expo) has become the sugarcane industry's premier grower expo event. This conference for everyone involved with the sugarcane industry is unique because it is organised and presented by sugarcane growers.

GIVE 08 inspired about 270 people from all cane growing regions. It was hosted by the Plane Creek Sustainable Farmers Group, Mackay Fibre Producers and the Calen and St Helen Young Farmers Group.

Held over two days in February 2008 the conference featured a series of presentations from grower groups conducting research and development funded by SRDC. Participants joined one of four field trips of the Mackay region on the last day to check out some innovative ideas in practice.

GIVE 08 spokesperson Col MacKenzie said, "This was a fabulous opportunity for anyone interested in new ideas to get a 'hands-on' feel for what's happening on the farm and to talk to people that are enthusiastic about the future of the sugarcane industry.

"Some of the things people saw first hand included: a variable rate fertiliser box, fibre crops like industrial hemp, sunn hemp and kenaf, the use of shielded sprays for chemical application, a rear steer axle on a haul-out, a centre pivot GPS swing arm, a variable rate planter and planting rate trial results, map overlays for precision agriculture, zonal tillage machinery, and harvester elevator modifications.

"GIVE 08 was about agricultural innovation at its best—real growers solving real problems by researching, experimenting, collaborating and fair-dinkum getting out and giving it a go," he said.

Another initiative aimed at improving the capacity of the industry to innovate was finalised in 2007–08. The project attempted to build the capacity for continuous improvement and innovation in the Isis and Maryborough Sugar Regions. It involved capacity building activities that targeted increased understanding of what was meant by 'continuous improvement and innovation', and provided tools that project participants could use. The project contributed to the development of an improved model for designing and managing projects to achieve sustainable improvement and innovation with an impact on profit and growth. This model has been used and applied to beef enterprises in South Africa and Australia. (SRDC Project Code: **WS011**)

Fostering targeted continuing education

As part of its ongoing commitment to invest in the future research capacity of the industry, SRDC's scholarship program provided opportunities for 17 postgraduate students to undertake training in technical and social disciplines.

The following students were enrolled in PhD and Masters programs in 2007–08:

Elizabeth Meier - The availability of nitrogen in GCTB soils in the wet tropics and its impact on productivity and profitability

Chuong Ngo - Molecular analysis of suckering and tillering in sugarcane

Peter Wulf - Self-regulatory codes of practice and their effectiveness in achieving best environmental management practices within NQ primary industries

Mira Durr - Microbiology of acid sulfate soils in agricultural environments

Kylie Anderson - Invasion potential of *Eumetopina flavipes*, vector of Ramu Stunt Disease of Sugarcane

Su Yin Tan - Studies on bagasse fractionation using ionic liquids

Karen Benn - The motivators and barriers to the adoption of more sustainable farming practices

Kenji Osabe - Development and application of a mature stem specific promoter in sugarcane

Tom Rainey - Improved bagasse fibre properties for the manufacture of paper, board and composite materials

Anna Satje - Improving the cation retention capacity of cane-growing soils using high activity clays

Felicity Atkin - Estimates of breeding value of sugarcane clones and their impact on efficient parent management and cross pollination

Palmina Bonaventura - Communicate to advance and innovate

Henry Thomas - Making database application development as straight forward as building spreadsheets

Ian O'Hara - Pretreatment of sugarcane bagasse for enzymatic hydrolysis and fermentation

Daniel Zamykal - Intelligent data analysis methods from effective integration of Precision Agriculture within the Australian Sugar Industry

Milovan Bokan - Abiotic stress tolerant sugarcane: Drought-proofing sugarcane with cell-death protection genes

Thirty SRDC and CRC scholarship students attended a successful two-day forum at Murwillumbah, New South Wales in February 2008.

The students were welcomed by SRDC Director Mac Hogarth, NSW grower Robert Quirk, BSES Senior Extension Officer Peter McGuire, SRDC Executive Director Frikkie Botha, and CRC SIIB Executive Director Peter Twine.

Econnect Communication put students through their paces by going through the theory and practice of successful communication and media relations techniques. Participants had the chance to put their skills to the test over an informal dinner with local industry members with the challenge of giving an overview of their research in a one minute presentation.

On day two the young researchers learnt the skills of poster presentation followed by a trip to the Condong Mill's cogeneration plant and the property of local farmer and researcher Robert Quirk. Five students presented a poster at ASSCT with one student, Brendan Dyer, taking out the prize for best poster.



Case study - Microbiology of acid sulphate soils in agricultural environments – Mira Durr (Australian National University)

ANU student Mira Durr is undertaking a project to increase the understanding of acid sulphate soil environments by investigating bacterial populations.

Bacteria are intrinsic to the oxidation of acid sulphate soils, which are widespread along the Australian coastline. Mira says that oxidation of these soils in Australia has resulted in widespread environmental degradation and decreased soil productivity.

The role of soil bacteria, both as oxidisers and in nutrient cycles is a key knowledge gap in the field of acid sulphate soils and Mira intends to use her scholarship to identify and quantify the various bacteria in these environments and link them to key soil interactions, including plant nutrient uptake and increased soil productivity.

She hopes her research will contribute to the general understanding of microbial soil interactions and lead to better management of acid sulphate soils for the future.

Case study - An integrated pest management strategy for climbing rat in the far-north Queensland sugarcane production system – Brendan Dyer (Queensland University of Technology)

Two species of rodent, *Rattus sordidus* and *Melomys burtoni*, are the most significant vertebrate pests in the Queensland sugarcane industry contributing to the loss of up to 400,000 tonnes of sugarcane and millions of dollars in lost productivity every year.

Brendan's project is developing a practical, cost-effective and ecologically-based management strategy to reduce the economic and environmental impact of climbing rat (*Melomys burtoni*) in north Queensland sugarcane.

The work will provide an understanding of the population dynamics of the climbing rat and identify critical organism-to-organism and organism-to-environment interactions that need to be targeted in a management strategy.

Brendan will also identify landscape factors that determine the spatial distribution of rodent damage within the sugarcane production system and integrate his findings into a pest management strategy that he hopes will lead to a change in farming practices.



GGIPs are seen to complement rather than compete with other industry research and development activities.

Investment Arena: People Development

Indicator	Enhanced effectiveness of partnerships and networks contributing to the sugarcane industry
Measure	Demonstration of improved capability and capacity of regional groups, networks, and industry sectors and researchers to collaborate and innovate to beneficially change the operation of the industry
NRPs	Using frontier technologies for building and transforming Australian industries
RRPs	Innovation skills

Plant breeders workshop – growing more than ideas

The joint BSES-CSIRO variety improvement program has undergone dramatic changes recently. The smut incursion, new field and laboratory techniques, new statistical methodologies and database development for variety selection coupled with staff turnover and a wide geographical area all highlight the importance of collaboration.

In late 2007 SRDC supported a workshop to bring together key personnel in the Variety Improvement and Pathology groups in BSES, CSIRO and CSR to document best-practice procedures for a range of variety improvement activities, develop innovative ideas to improve efficiency and accuracy in the variety improvement program and improve their understanding of new field and laboratory based technologies. Workshop presentations were compiled and now form a supplementary reference material to the Plant Breeding Manual. (SRDC Project Code: **BSS313**)

Grower group investments reaping rewards

2007–08 marked the third year of SRDC investment in Grower Group Innovation Projects. A 2008 review into the program suggests that it is strongly supported by industry.

The review found that the program is successfully engaging researchers and extension staff in on-farm, farmer-driven trials which have resulted in mutual and broader industry benefits. GGIPs are seen to complement rather than compete with other industry research and development activities.

The work rigorously undertaken on-farm by growers has a high level of credibility amongst growers. Growers and their groups have been active in spreading project findings, with traditional methods of sharing agricultural information being at the forefront e.g. field days, open days, bus trips, farm walks and the GIVE farmer expo.

The biggest industry gains from the program appear to be a more rapid adoption of practices and farming systems - the top three topics of GGIPs are farming systems (28%), environmental improvements (20%) and pest management (17%).

Some of the feedback from industry members includes:

- “Done by growers and told by growers.”
- “It is a great concept as the farmers’ do the research etc in their own working environment which I believe results in a more realistic result.”
- “Great for the industry – many hands make light work.”
- “Brings out good ideas and advances and makes it quickly available to the industry.”
- “Without SRDC funding, our project would not have been as successful.”
- “Needed for industry survival.”

More detailed outcomes of GGIPs have been reported throughout this report, primarily in the Regional Futures Investment Arena. However, the following is a snapshot of some of the economic benefits already being realised by growers.

Case study – *Grower Group success stories*

- **Pinnacle Group** (Herbert) GGP003 *Implementation of controlled traffic farming of sugarcane in the Herbert River district*
\$144/ha saving in total plant cane growing costs with the new farming system, plus a 5hr/ha saving in labour.
- **NSW Farming Systems Group** (NSW) GGP009 *Implementing zero-till planting systems in the NSW sugar industry*
Land preparation savings from using a zero till planting system have been calculated at \$121.00/ha + labour (labour saving estimated to be \$64/ha based on a \$20/hr wages).
- **MAD Planting group** (NSW) GGP010 *Accurate, consistent bed forming to promote better farming practices*
Average planting costs reduced from \$96/ha to \$75/ha using one-pass bedformer.
- **New Farming Initiative group** (Herbert) GGP012 *Researching soil health and economics of two farming systems in the Herbert River district*
Improved farming system including soybean green manure crop, increased gross margin of \$105/ha over conventional farming system.
- **Singh Harvesting Group** (Tableland) GGP026 *Implementation of a 2 metre Farming System*
Modification costs to allow harvester to cut dual-row cane at 2m bed spacing as well as conventional 1.5 single rows, recouped in first year due to reduction of harvesting costs of about \$1/ tonne cane (\$100,000 costs of converting to 2m system; 110,000 tonne harvesting contract).
- **Blackburn Harvesting Group** (Mackay) GGP023 *Utilising Available Technology to Better Manage Yield Variability Within Blocks*
Gross margin on cane fallow that grew peanuts for sale \$1,321/ha compared with conventional bare fallow GM of -\$256/ha (i.e., \$1,577/ha better off).
- **North Coast Grower Group** (Mackay) GGP007 *Controlled traffic farming systems for the North Coast Grower Group*
Comprehensive trial program by several farmers in the group – up to \$500/ha improvement in gross margins as a result of converting to 1.8 m dual row cane farming systems.
- **Mackay Fibre Producers** (Mackay) GGP024 *Validation of fibre cropping in rotation with sugar cane by Mackay Fibre Producers*
This group has imported sunn hemp seed and has shown the value of this as a break crop for sugarcane. Although this is a common break crop in sugarcane rotations in southern Africa, it has not previously been trialled in Australian sugarcane.
- **Calen and St Helen Young Farmers** (Mackay) GGP021 *Bed forming utilising GPS guidance by the CASH (Calen and St Helen) Young Farmers Group*
One of the cooperating farmers in the group has documented an improved farm gross margin as a result of implementing an improved cane farming system (conventional farming system gross margin in 2007 of \$20,070 cf. improved farming system gross margin of \$54,947, or 1.4% cf. 4% return on investment).
- **Homebush Innovative Farmers** (Mackay) GGP020 *Beach sand to black clay*
Improvements to farming systems on the Bugeja farm have been shown to reduce the cost of cane production by \$2 per tonne, and the investment in the improved cane farming system is likely to be paid off within three years from the improved returns.

The WIS E-network is a cross-regional initiative which brings together women from all sectors of the sugar industry, provides a network for women to share information of relevance to the sugar industry and helps to increasing their knowledge of industry issues.



A CSIRO-led project is building stronger networks between women and strengthening their collective voice in industry.

A united female voice

As well as developing the individual skills of women, SRDC invested in a project which is working to build stronger networks between women and to strengthen their collective voice in the industry in two case study regions – the wet tropics and Bundaberg.

One element of this CSIRO Sustainable Ecosystems-led project is the formation of the Women in Sugarcane E-network (WIS E-network). The WIS E-network is a cross-regional initiative which brings together women from all sectors of the sugar industry, provides a network for women to share information of relevance to the sugar industry and helps to increasing their knowledge of industry issues.

The WIS E-network has the potential to increase women's input into the industry by encouraging participation and broadening their knowledge of industry issues. This is important, as women are often the industry interface with the community. Indeed, as women's role in the industry is changing, with women needing to have a greater input into decision-making at the farm and industry level, the WIS E-network is an important sustainability initiative, which can help women make the most of this changing context.

At the end of March 2008, 45 people had formally applied to become members of the WIS E-network. (SRDC Project Code: **CSE016**)

Improved industry structures and processes

SRDC is investing in projects which help the industry to improve the way they interact and do business.

A collaborative project between CSR, Cane Harvesters Association, CANEGROWERS, BSES Limited and social scientists to map the culture of the sugar industry in the Herbert has helped industry to understand behaviours that create blockages to cooperation.

The project delivered awareness of the cultural factors that led to sector differentiation and distrust; it created an understanding of those factors and empathy for the other parties. That insight has enabled over 200 people to begin to think and act more collaboratively and objectively. Key people became more solution-focused, rather than problem-focused as in the past.

After creating this understanding, facilitation tools were designed and trialled to improve cooperation between stakeholders. Over 50 people have seen the intervention successfully employed and they now have an appreciation of an alternate way of conducting dialogue. Seventeen local industry and community people now have the knowledge and skills to diffuse the process further. (SRDC Project Code: **CSR030**)

A Mackay Area Productivity Services-led project which commenced in 2007–08 is encouraging industry to work more effectively together.

Due to a lack of shared vision, coordination of services, and leadership skills among five of the major grower-service providers in the Mackay region, it has become clear that there is a 'system problem', resulting in confusion amongst growers about who provides which service, and also duplication of some services. While this project is still in its early days there is clearly a collective recognition of the need to change - allowing participating organisations to work together with increased synergy. (SRDC Project Code: **MAP002**)

A CSR Sugar-led project to conduct a cultural imprint analysis in the Herbert concluded in 2007–08. The project has had direct social benefit through mapping and recording the culture. This project also identified the less beneficial, entrenched aspects of that culture and generated alternative positive behaviours. Working alongside industry, researchers successfully trialled interventions in contexts where there were both social and economic blockages. Researchers also provided facilitation skills to a broad cross section of the sugar community, and encouraged those people to diffuse the skills even further (SRDC Project Code: **CSR030**)

A project called Fast Track was undertaken as part of the collaborative Cooperative Venture for Capacity Building. The aims of the project were to test and refine research findings in the area of capacity building, to bring together key project managers and practitioners, and to enhance their capacity to choose, design, support and evaluate their capacity building efforts. A group of six people from the sugar industry attended. During 2007–08, participants developed a range of projects mainly aimed at improving the capacity building efforts of their existing workplans. Positive outcomes were achieved from the participants who saw the mentoring experience and the interactions with other industries as valuable. (SRDC Project Code: **SRD024**).

A GIS knowledge sharing enterprise, the Herbert Information Resource Centre, took out the Innovation Award honour.

Recognising and rewarding innovation

Australia's sugarcane industry celebrated its innovative members at the annual Sugar Research and Development Corporation's Innovation Awards, announced in Townsville as part of the 2008 ASSCT conference.

The SRDC Innovation Awards program recognises the contribution of individuals and teams towards the implementation of technologies and practices that create a positive change to the Australian sugarcane industry.

The awards program reinforces SRDC's efforts in encouraging industry, researchers and other stakeholders to collaborate and embrace advances in science, technology and engineering, and to maintain a leading edge in the competitive world market through innovation. The program is helping SRDC to reinforce the importance of creating an innovative culture.

SRDC Innovation Award

A GIS knowledge sharing enterprise, the Herbert Information Resource Centre, took out the Innovation Award honour. The centre, based in the Herbert River catchment area, has recognised that the future of sugarcane farming is in precision agriculture and has met the challenges of resourcing the industry with a comprehensive geographical information system and by forming local partnerships and building capacity through knowledge sharing within the community.



SRDC Service Award

The 2008 Service Award, which is given to someone that shows strong leadership and influence in the management, policy development or promotion of innovative R&D, was presented to a plant pathologist with the Indonesian Sugar Research Institute. In strong recognition of the high esteem in which he is held throughout the industry, Irawan was nominated for this award for his years of dedication to a collaborative project to screen Australian varieties of sugarcane for resistance to smut.

The smut resistance ratings obtained in Indonesia will influence the ongoing viability of the industry in Australia as the new smut-resistant varieties bred and trialled by Irawan are released.

Irawan was nominated for the SRDC Service Award for his years of dedication to a collaborative project to screen Australian varieties of sugarcane for resistance to smut



SRDC R&D Award

The SRDC Research & Development Award went to James Cook University lecturer Dr Yvette Everingham for her work in seasonal climate forecasting. Dr Everingham has been working closely with sugarcane growers in the Tully region to develop an early warning rainfall forecasting system. The challenge has been to break through the autumn predictability barrier enabling the industry to make better decisions for harvesting and mill operations, potentially saving millions of dollars.

This research is both topical and timely – and meets two key national research priorities: addressing and preparing for climate change.

Dr Yvette Everingham was recognised for her work in seasonal climate forecasting





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Corporate Governance

The SRDC Board is committed to governance systems that enhance performance and ensure that SRDC is operating according to accountability provisions of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act) and the *Commonwealth Authorities and Companies Act 1997* (the CAC Act). The Corporate Governance practices adopted by SRDC are:

Leadership

SRDC operates under the direction of a Board which is responsible for developing the Corporation's policies, governing its operation and monitoring its performance. The Executive Director leads the SRDC management team and is accountable to the Board for day to day operation of the Corporation. The Board has two committees – an Audit Committee to provide advice on accounting, financial reporting, compliance practices and risk management, and a Scholarship Committee which provides advice to the Board on policies relating to scholarships and the awarding of scholarships.

The key Board functions are:

- establishing goals and setting strategic direction
- developing and approving a five year R&D Plan, an Annual Operational Plan, Portfolio Budget Statement and producing an Annual Report
- establishing policies and approving procedures for the operation of SRDC
- ensuring that risk assessment and management frameworks are in place to minimise business and financial risk
- ensuring that R&D resources are allocated to address priority issues effectively
- ensuring compliance with applicable laws and provisions of the CAC Act
- ensuring that Directors and staff maintain the highest ethical standards in accordance with the Code of Conduct
- appointing, appraising, and setting the level of remuneration for the Executive Director

- evaluating its own performance and that of its committees and SRDC management against agreed indicators.

Planning and reporting

The five year *R&D Plan 2007–2012* defines SRDC's core business, indicates broad priorities for R&D and defines the corporate strategy to achieve its outputs and outcome. The plan is reviewed annually.

The *Annual Operational Plan* (AOP) specifies the broad groupings of R&D activities that SRDC proposes to fund during the financial year together with an estimate of income and expenditure. The AOP must be submitted to the responsible Minister for approval and a copy forwarded to each of SRDC's Representative Bodies.

The *SRDC Portfolio Budget Statement* summarises SRDC's outcome, outputs, performance information and financial position each year. It is consistent with the five year R&D Plan and the AOP and is tabled in Parliament.

The *SRDC Annual Report* gives particulars of R&D activities funded during the year (inputs), and a review of how SRDC has performed in relation to the objects of the PIERD Act, the SRDC R&D Plan and its corporate outputs and outcome. The Annual Report must be submitted to the responsible Minister for tabling in Parliament and provided to each of SRDC's Representative Bodies.

Accountability to stakeholders

SRDC is accountable to both the Australian Government and industry representative organisations.

Responsible Minister

SRDC is responsible to the Federal Parliament through Minister for Agriculture, Fisheries and Forestry. The Honourable Tony Burke became the Minister for Agriculture, Fisheries and Forestry on 5 December, 2007. Prior to this, SRDC reported through the Honorable Sussan Ley, Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry. The Minister:

- Approves the five-year R&D Plan and the Annual Operational Plan
- Appoints Directors, other than the Chair and Executive Director, of SRDC on the recommendation of the Sugar Research and Development Corporation Selection Committee
- Appoints the Chairperson of SRDC.

SRDC communicates with the Minister in writing after every in-person Board meeting. At its July 2007 meeting, the SRDC Board approved the SRDC R&D Plan 2007–2012 and advised the Minister of the outcome of that review. The Hon Tony Burke, Minister for Agriculture, Fisheries and Forestry officially launched the SRDC R&D Plan 2007–2012 on 11 June 2008.

In 2007–08, no significant events occurred that required notification to the Minister under section 15 of the CAC Act.



Industry Representative Organisations

The PIERD Act prescribes the following representative organisations of SRDC:

- Australian Cane Growers Council Limited
- Australian Cane Farmers Association Limited
- Australian Sugar Milling Council Proprietary Limited.

The Chair and Executive Director, representing the Corporation, held formal consultations with the Representative Bodies, as required by the PIERD Act, on three occasions in 2007–08. No payments were made to the Representative Bodies for these or any other consultations or purpose in 2007–08.

The major issues discussed at the meetings with the Representative Bodies included the new SRDC R&D Plan 2007–2012, SRDC's strategic direction, research priorities, the appointment of a new executive director and the SRDC AOP 2007–08.

Directors interacted frequently with the industry peak bodies on several occasions during industry events. The SRDC program of Regional Workshops also provided an excellent opportunity for directors to meet with local industry representatives.

Consultation with other industry organisations

During the year, the Executive Director made presentations to the Boards or annual meetings of Australian Sugar Milling Council, NSW Sugar Milling Cooperative and Queensland Sugar Limited on SRDC's role in the R&D partnership between government and industry, and SRDC's R&D portfolio and outcomes.

Due diligence

As part of SRDC's Corporate Governance Framework, the Board completes a Due Diligence Checklist at the conclusion of each Board meeting. At every meeting in 2007–08, the Board confirmed that all decisions had complied with the requirements of the Due Diligence Checklist.

Management

The SRDC Business Process Management System (BPMS) folds active quality assurance into the daily management of SRDC. It is an essential tool in managing risk and controlling fraud and its annual audit is overseen by the Audit Committee.

Financial management and auditing

SRDC maintains accounts and records of transactions in accordance with accepted accounting principles. Financial statements are prepared in accordance with Schedule 1 of the CAC Act and Australian Equivalents to International Financial Reporting Standards.

Financial statements and cash flow forecasts are prepared monthly and are provided to the Board. Following the annual external audit of the Corporation's financial accounts, the Executive Director presents a Management Representation Memorandum to the Board for final adoption of the annual financial statements. The memorandum for the 2007–08 financial year was approved by the Board on 26 August 2008.

CAC Act compliance

A report indicating CAC Act compliance and financial sustainability for the 2007–08 financial year was approved by the Board on 26 August 2008 and forwarded to the Department of Finance and Administration and the Department of Agriculture, Fisheries and Forestry.

Risk management

SRDC is committed to the management of risk to continue to protect its stakeholders; employees and their skills; environment; quality of service; assets and intellectual property; contractual and statutory obligations and image and reputation.

At the March 2008 Board Meeting, the Board adopted the Fraud Control Plan March 2008, Risk Management Plan March 2008 and Business Continuity Plan March 2008 as approved by the February 2008 Audit Committee.

SRDC complies with the policies of the Protective Security Manual.

Indemnities for officers

SRDC has taken steps to ensure that adequate cover for Directors and Officers is in place. No issues arose under the relevant legislation that required reporting.

Monitoring

The SRDC R&D Plan 2007–2012 outlines strategies and performance measures that provide a framework for monitoring activities and measuring corporate performance. At the operational level, the BPMS details processes for monitoring and assessment of SRDC's R&D investments and management performance.

R&D investment portfolio management

Following a call for project proposals, made annually in July, SRDC-appointed Working Parties with representatives from industry, government and research organisations provide advice to the SRDC Board on the proposals received.

Proposals are assessed using an attractiveness/feasibility framework. Attractiveness includes expected economic, environmental and social benefits through adoption of outputs; potential return on investment and other inputs; communication plans and industry and/or community participation. Feasibility is based on research risk (the likelihood, with high quality research, of reaching the project objectives and delivering the outputs and outcomes) and research quality (the objectives, research plan, and the skills and knowledge of the investigators).

Following an initial application process which attracts a broad range of research projects, and based on the advice of the Working Parties, the Corporation interacts with project teams throughout the development of Full Project Proposals. This process results in higher quality and better targeted Full Project Proposals, involving stronger partnerships between industry, research and community participants.

Four R&D Investment Managers managed a portfolio of projects to maximise the return on R&D investment in delivering outcomes consistent with the accountability expectations of SRDC's stakeholders.

Intellectual property management

SRDC's intellectual property management is based on the Intellectual property management (IPM) plan. The IPM Plan was developed in consultation with SRDC's major R&D providers, and the elements of the plan have been incorporated into the SRDC application and project management systems. The IPM Plan ensures that intellectual property issues are considered fully during the development of project proposals.

Although formal ownership of intellectual property developed in most SRDC-funded R&D projects is vested in the research organisations, SRDC retains an interest in the exploitation of that intellectual property. The Corporation is a party to several patents and provisional patent applications.

Communications

The SRDC Board re-affirmed their commitment to establishing a culture of innovation within the industry and continued to foster two-way communication with stakeholders consistent with the SRDC Communications Plan 2007–08.

The Plan sets out the strategic intent, desired outcomes, and key strategies of SRDC's activities to facilitate the application of knowledge from SRDC's R&D investments and other sources.

Communication tools including SRDC Update (published bi-monthly with the support of industry publications and on the SRDC website), an e-Newsletter (distributed monthly to subscribers via email) along with regular media releases help support SRDC's communication strategies.

The SRDC website allows access to information, results and resources about SRDC's investment portfolio.

Regional Workshops created a platform for industry participants to provide feedback on a range of issues including their views on regional R&D needs and their satisfaction with the performance of SRDC's investment portfolio.

Articles reporting results from SRDC funded R&D and published in scientific journals, as well as papers included in the proceedings of major conferences, are attached in Appendix C. These include conference papers presented at the annual conference of the Australian Society of Sugar Cane Technologists held in Townsville in April 2008, other conference papers, and articles published in recognised Australian and international scientific journals.

An external review of communication activities was undertaken in 2007–08. This review found that SRDC has significantly improved its communication performance since the last formal assessment in 2004. The main communication challenge for SRDC into the future will be to continue to refine its overall communication direction and in particular, to explore new and meaningful ways to engage with grassroots stakeholders.

SRDC Board

The SRDC Board is responsible for the stewardship of the Corporation, and oversees corporate governance within SRDC. Its other functions include establishing goals, setting strategic direction, approving the annual budget, developing and approving a five year R&D plan and ensuring that R&D resources are allocated to address priority issues effectively.

The roles and responsibilities of members of the Board and their code of conduct are detailed in SRDC's BPMS.

In 2007–08 SRDC Directors included:

- Chair, appointed by the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry.
- Executive Director, appointed by the Board of the Corporation and the only full-time Director.
- seven Nominated Directors, appointed by the Minister for Agriculture, Fisheries and Forestry on the recommendation of the Sugar Research and Development Corporation Selection Committee.

Directors other than the Executive Director serve on the Corporation for a term not exceeding three years.

Directors have experience in one or more of the following fields of expertise: commodity production, commodity processing, commodity marketing, conservation of natural resources, management of natural resources, science, technology and technology transfer, environmental and ecological matters, economics, administration of research and development, finance, business management, sociology or public administration.

New Board members go through a formal induction process. With the Chair's approval, Directors may obtain independent professional advice, at SRDC's expense, on matters arising in the course of their board and committee duties.



Directors at 30 June 2008

SRDC Directors

Ian Knop AM BBus CPA
Chair (Non-executive)

Appointed 1 October 2007 for a three year term

Mr Knop established Profile Ray & Berndtson in 1976 – an international executive search and strategic consulting advisory firm that has 55 offices worldwide and works with leading organisations in the private and public sectors.

In addition to his role as Chairman and Managing Director of Profile Ray & Berndtson, Mr Knop is the Deputy Chairman of the Aurora Energy Board, Director of the Export Finance & Insurance Corporation and member of the Sullivans Cove Waterfront Authority.

Mr Knop is a retired chairman of Soccer Australia, the Sydney Ports Corporation and the Australian Hotel School of Management and is a former director of Wilhelmsen Lines Australia, NSW Financial Institution Commission and the FIFA World Club Championship Board.

In 2007 he was awarded the Order of Australia for his services to the state of Tasmania and his contribution to sport and indigenous affairs across Australia.



Stephen Guazzo, Frikkie Botha, Ian Sampson, David Campbell.

Stephen Guazzo
Deputy Chair (Non-executive)
 Re-appointed 8 May 2008
 Appointed Deputy Chair 6 June 2008
 Re-appointed Member of SRDC
 Audit Committee 6 June 2008

Stephen Guazzo is a third generation canegrower from the Herbert River region with over 35 years experience in the industry. Stephen has a reputation for innovative cane production and harvesting practices. He has served on the Herbert Regional Advisory Group (RAG) and other industry bodies and is a Director or CANEGROWERS Herbert River CANEGROWERS Queensland and Sugar Terminals Limited.

Frikkie Botha BSc (Hons), MSc
Executive Director (Executive)
 Appointed 11 October

With a career spanning 30 years in the plant research field, Dr Botha most recently served as the director of the South African Sugarcane Research Institute and is well known and respected within the Australian and international sugarcane industry. He commenced with SRDC in January 2008.

Ian Sampson B.Comm.,
 LLB., GAICD
Director (Non-executive)
 Appointed 8 May 2008
 for a three year term
 Convenor of SRDC Audit
 Committee

Ian Sampson is Executive General Manager of People and Sustainability for Thiess Pty Ltd. He is also a Director of Lysaght Peoplecare Ltd. From 1999–2004 he was General Manager Human Resources and Stakeholder Relations for CSR Sugar. During this time he co-led a SRDC-funded project to build the capacity of industry leaders. He received the SRDC Innovators Award for 2003 for this project. Since 2004 Ian has worked as a strategic advisor to several sugar companies, as well as consulting in the mining, manufacturing, aviation, petroleum and services industries in Australia, South Africa, Papua-New Guinea and Fiji. Ian's qualifications include a Bachelor of Commerce and a Bachelor of Laws from the University of NSW. He is a Graduate Member of The Australian Institute of Company Directors.

David Campbell B.Agr.Sc. (Hons),
 M.Bus.Mktg., AFAIM, GAICD
Director (Non-executive)
 Appointed 8 May 2008
 for a three year term
 Member of SRDC Audit
 Committee

David Campbell has over 25 years of experience in product and business development; commercialisation of technologies; marketing; logistics and general management. His experience spans the life sciences, biotechnology, agribusiness and chemical industries domestically and internationally. He has wide experience with the research sector and with government interaction. David has held senior positions at Stem Cell Sciences plc, Monash Commercial Pty Ltd, Monsanto Australia Limited, Linfox Group, and Pivot Ltd (now Incitec Pivot Ltd). He has run a successful consultancy in strategy and policy development, and commercialisation for the life sciences and agribusiness industries, government and Rural R&D Corporations. He is currently Executive Director, Office of Knowledge Capital, Melbourne.



Michael Braude, Angela Williams, Caroline Coppo, Anthony Pressland.

Michael Braude BBus, ASCPA, SF Fin, MBus
Director (Non-executive)
Appointed 8 May 2008 for a three year term

Michael Braude has 25 years commercial experience in management, economics, finance and treasury across three major corporations. He has held responsibilities for risk management, insurance and corporate treasury functions and has acted as a company appointed Alternate Director and Superannuation Trustee. Michael has also been actively involved with professional associations and tertiary educational bodies, as a lecturer, course convenor and presenter. He is a regular presenter on a wide range of finance and business related topics to a number of professional associations. He also holds a Masters of Business (Applied Finance) degree from the University Of Technology, Sydney (UTS), and a Bachelor of Business qualification.

Anthony Pressland PSM, B Agric Sci, MSc, PhD
Director (Non-executive)
Appointed 7 July 2008 for a three year term

Tony Pressland is a consultant with extensive experience in research and development and natural resource management,

Angela Williams B Agr. Sc.
Director (Non-executive)
Appointed 8 May 2008 for a three year term Member of SRDC Scholarship Committee

Angela Williams has spent the past 20 years growing and refining her skills in agricultural extension, group extension and community engagement processes across a range of rural industries across Queensland. Angela has run a successful consultancy business specialising in managing short term contracts specifically those which relate to change management, project management and business planning. She managed and delivered the Sugar Executive Officer contract as part of the Sugar Industry Reform Program in the Bundaberg-Isis sugar region. Angela is passionate about working and supporting rural industries and associated rural communities through innovation and managing the challenges of constant change.

both as a scientist and administrator. He has worked in the pastoral and agricultural lands of Queensland, including the sugar growing areas of the south. In his capacity as a senior executive officer of government, he had responsibility for programs in weed and pest management, catchment management, and natural resource planning and management, including those which were community based. He has undertaken reviews of a government agency's science portfolio, of weed incursions, and of issues associated with community based natural resource management. He has helped develop tertiary post graduate courses and he also chairs a science advisory committee for a tertiary institution.

Caroline Coppo BSc, Dip EnvEd, BEd, GAICD
Director (Non-executive)
Appointed 8 May 2008 for a three year term Member of SRDC Scholarship Committee

Caroline Coppo has been involved in a sugarcane farming business in the Herbert region for ten years and has actively contributed to community development, sugar industry innovation and environmental issues in the region. She has a background as a marine biologist, teacher and catchment coordinator and has extensive knowledge of water quality, environmental and natural resource management issues. Caroline was the Sugar Executive Officer in the Herbert sugar region as part of the Sugar Industry Reform Program and is currently a Director of terrain NRM, the regional NRM body in the Wet Tropics. Caroline's qualifications include a Bachelor of Science and a Bachelor of Education from James Cook University. She is a Graduate Member of the Australian Institute of Company Directors.



Robert Granger, Russell Muchow, Andrew Barfield.

Directors retiring in 2007–08

Robert G Granger BEcon
FAICD

Chair (Non-executive)

Ceased on 30 September 2007

Bob Granger was formerly General Manager of Queensland Fruit and Vegetable Growers Ltd, and has extensive experience in R&D and change management in the Horticulture industry. He is currently Chair of Wholesale Ornamental Nurserymen Pty Ltd and also chairs the Australian Mushroom Industry Advisory Committee, the Australian Avocado Industry Advisory Committee and the Australian Apple and Pear Industry Advisory Committee. He was chair of the Australian Government's Sugar Industry Guidance Group.

Russell C Muchow BAgSc
(Hons) MAgrSc PhD FAIAST
FAICD

Executive Director (retired
as SRDC Executive Director
20 July 2007)

Appointed in April 2001

Prior to Russell Muchow's appointment, he was Chief Research Scientist in CSIRO where he worked for 25 years on enhancing the cropping industries of northern Australia. He has provided research leadership in using whole-of-systems approaches and change management to identify and implement ways of increasing profitability and sustainability of agricultural industries, particularly the sugar industry. He was awarded the Australian Medal of Agricultural Science in 2001 for his contribution to the advancement of Agriculture in Australia. During 2003–04, Dr Muchow was a member of the Sugar Industry Guidance Group for industry reform. He was named a Fellow of the Australian Institute of Company Directors in 2006.

Andrew Barfield BAgSc MBA
GAICD

Deputy Chair (Non-executive)

Ceased as Director

30 April 2008

Member: SRDC Scholarships
Committee

Andrew Barfield is a cane farmer in the Pleystowe district and is Chairman of Mackay Area Productivity Services Ltd. He is a former Director of Mackay Sugar Cooperative Association Ltd and mill representative on the Pleystowe, Racecourse, Marian and Farleigh Cane Production Boards. A 1998 Nuffield Scholar, he was formerly Chairman of CANEGROWERS, Pleystowe.



Patrice Brown, Mary Corbett, Douglas (Mac) Hogarth.

Patrice A Brown BSc , Cert Sugar Tech, MEng (Civil), Cert Env Practitioner, GAICD, MEIA **Director** (Non-executive) *Ceased as Director 30 April 2008* **Member:** SRDC Audit Committee

Patrice Brown was employed in the sugar industry for thirteen years as a chemist and production supervisor in the Burdekin, Central and Herbert districts before transferring to CSR Timber. She has held senior executive positions with Sinclair Knight Merz, Connell Wagner and Aldoga Aluminium. Patrice now runs her own environmental consultancy, CQ Environmental Pty Ltd. She is also a partner in a beef cattle/ grain property in Central Queensland. Her areas of expertise include environmental management, government liaison, business management, natural resource management and commercial development.

Patrice was formerly a director of the Emerald Agricultural College and is a member of the SRDC Audit Committee.

Mary E Corbett BSc (Hons) PhD AFAIM FAICD **Director** (Non-executive) *Ceased as Director 30 April 2008* **Convenor:** SRDC Audit Committee

Mary Corbett is a Director of Food Science Australia and Managing Director of Australian Business Class, a Brisbane based management consulting company. She specialises in executive facilitation and training, strategic planning, product development and IP commercialisation through licensing. She has held senior executive positions in R&D, Product Commercialisation and Business Development in biotechnology and government sectors. She was formerly Director, International Business for BCE and Director, Business Development for AGEN Biomedical Ltd.

Douglas (Mac) Hogarth AM BAgrSc MScAgr PhD FAIAST **Director** (Non-executive) *Ceased as Director 30 April 2008* **Chair:** SRDC Scholarship Committee

Mac Hogarth retired from BSES in September 2002 where he was Manager for Special Projects. He has worked in the sugar industry for over 40 years, principally as a plant breeder and biometrician with BSES, and led the BSES plant improvement program for 12 years. He is Permanent Editor of the Proceedings for ISSCT, was Editor of ASSCT for nine years, and was President of ASSCT in 2001–02. Mac is a Life Member of the ASSCT and ISSCT. He was made a member of the Order of Australia, General Division, in the Queen’s Birthday honours list in 2006.

Meetings of the Corporation

During the year ended 30 June 2008, the SRDC Board met five times, including one Resolution without Meeting via email. Attendance of Directors at Board meetings is listed in Table 4.1.

Under Section 54 of the PIERD Act, a Director must disclose the nature of any pecuniary or conflict of interest in any matter being considered. One Director declared an interest on one occasion. Directorships held by Directors were also recorded in the Register of Declared Interest by Directors.

Table 4.1 Directors' attendance at Board meetings and meetings of the Audit and Scholarships Committees in 2007–08

	Board meeting attended	Meetings held during membership	Audit committee meetings attended	Audit committee meetings held during membership	Scholarship committee meetings attended	Scholarship committee meetings held during membership
A Barfield	5	5	-	-	2	2
F Botha	2	2	-	-	-	-
M Braude	1	1	-	-	-	-
P Brown	5	5	3	3	-	-
D Campbell	1	1	-	-	-	-
M Corbett	5	5*	3	3	-	-
C Coppo	1	1	-	-	-	-
R Granger	3	3	-	-	-	-
S Guazzo	6	6	3	3	-	-
D Hogarth	5	5	-	-	2	2
I Knop	3	3	-	-	-	-
R Muchow	1	1	-	-	-	-
I Sampson	1	1	-	-	-	-
A Williams	1	1	-	-	-	-

*M Corbett attended BM 15 November (BM 4-07/08) via telephone for Items 1–4, 6–4 and 6.6.

Board Committees

The Board's effectiveness is increased through the establishment two committees which operate under policies and procedures approved by the Board.

Audit Committee

The Audit Committee provides advice to the Board to assist it in fulfilling its responsibilities relating to accounting, reporting and compliance practices of the Corporation. The Committee reviews audits by the Corporation's external auditors, maintains communication among the Board and the Corporation's accountants, reviews the financial information presented by management, and reviews the adequacy of the Corporation's administrative, operating and accounting controls.

In addition, it oversees the management of risk including the development of a risk profile for the Corporation, fraud control, corporate governance and environmental issues. It is SRDC practice to exclude the Chair and Executive Director from membership of the Audit Committee.

Members of the Committee in 2007–08 were:

- Dr M E Corbett, a non-executive Director of SRDC and member and convener of the Audit Committee from 2 August 2004 until 30 April 2008
- Ms Patrice A Brown, a non-executive Director of SRDC and member of the Audit Committee from 23 March 2006 until 30 April 2008
- Mr Steve Guazzo, a non-executive Director of SRDC and member of the Audit Committee from 22 March 2007
- Mr Ian Sampson, a non-executive Director of SRDC and member of the Audit Committee from 6 June 2008
- Mr David Campbell, a non-executive Director of SRDC and member of the Audit Committee from 6 June 2008.

The Committee met on three occasions during 2007–08. Attendance by members is listed in Table 5.1. The meetings were also attended by the Executive Director and the Corporation's Operations Manager as observers to provide assistance. The Corporation's external accountant and a representative of the external auditor attended the July 2007 meeting to comment and respond to queries on the annual accounts as required.

Scholarships Committee

The Scholarships Committee was established to oversee the SRDC scholarship scheme and at least half the membership must comprise Directors of SRDC.

Members of the Committee in 2007–08 were:

- Dr D M Hogarth, a non-executive Director of SRDC and chair of the Scholarships Committee from 4 June 2002
- Mr A Barfield, a non-executive Director of SRDC and member of the Scholarships Committee from 2 August 2004
- Ms C Coppo, a non-executive Director of SRDC and member of the Scholarships Committee from 6 June 2008
- Ms A Williams, a non-executive Director of SRDC and member of the Scholarships Committee from 6 June 2008
- Dr D M Maldonado, an Investment Manager of SRDC and member of the Scholarships Committee from 22 March 2007.

The Committee met on two occasions in 2007–08 to assess scholarship applications, and to interview and select successful candidates. Attendance by Director members is listed in Table 4.1.



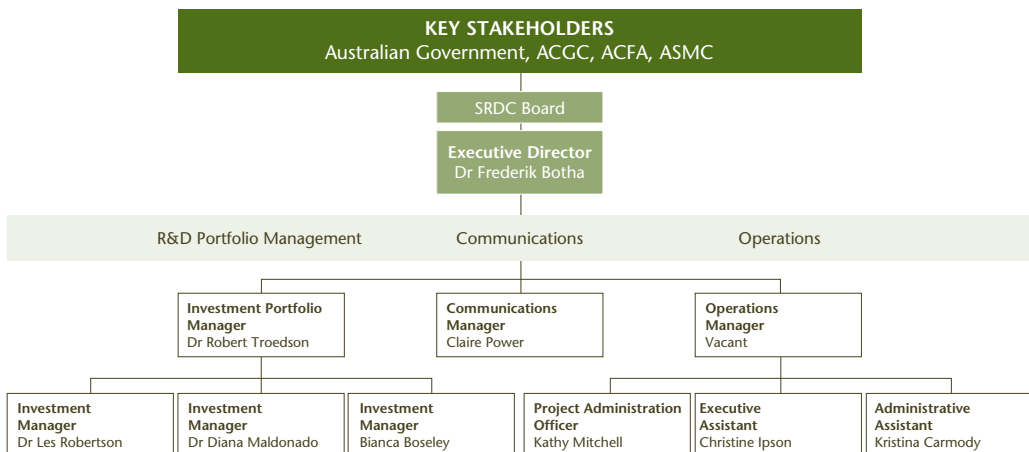
SRDC Staff

SRDC staff are employed under Section 87 of the PIERD Act. At 30 June 2008 the Corporation employed six full time and three part time staff in addition to the Executive Director. Responsibilities for each staff member are indicated in SRDC’s Corporate Structure (Figure 4.1).

Members of the SRDC team (L-R) Claire Power, Les Robertson, Diana Maldonado, Frikkie Botha, Bianca Boseley and Robert Troedson.

SRDC staff are located at the SRDC office at Level 16, 141 Queen Street, Brisbane 4000.

Figure 4.1 SRDC Corporate Structure



Reporting Requirements

Enabling legislation

SRDC was established under the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act) on 1 October 1990. As an Australian Government Statutory Authority it is also subject to the *Commonwealth Authorities and Companies Act 1997* (the CAC Act).

The objects of the PIERD Act are to make provision for the funding and administration of research and development relating to primary industries with a view to:

- a) increasing the economic, environmental or social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries
- b) achieving the sustainable use and sustainable management of natural resources
- c) making more effective use of the resources and skills available in the community in general, and in the scientific community in particular
- d) improving accountability for expenditure upon research and development activities in relation to primary industries

The PIERD Act establishes the following functions of SRDC:

- to investigate and evaluate the requirements of the sugar industry for R&D, and on the basis of that investigation and evaluation, to prepare an R&D plan, and to review and revise the plan
- to prepare an annual operational plan for each financial year
- to coordinate or fund the carrying out of R&D activities that are consistent with the annual operational plan prepared by the Corporation and in force at the time
- to monitor, evaluate and report to the Parliament, the Minister and its representative organisations on R&D

- activities that are coordinated or funded, wholly or partly, by the Corporation
- to facilitate the dissemination, adoption and commercialisation of the results of research and development for the sugar industry
- such other functions as are conferred on the Corporation by this Act or any other Act.

Copies of the SRDC R&D Plan, Annual Operational Plan and Annual Report are available from the SRDC website, or by contacting SRDC.

General policies of the Government

Under section 28 of the CAC Act, the Minister may notify the SRDC Board of any general Australian Government policies that apply to the SRDC.

As at 30 July 2007, the following notifications had been received:

- Commonwealth Fraud Control Guidelines 2002
- Finance Circular No. 2002/01 – Foreign Exchange (FOREX) Risk Management
- Finance Circular No. 2002/02 – Cost Recovery by Government Agencies
- National Code of Practice for the Construction Industry and the Commonwealth's Implementation Guidelines
- Finance Circular 2005/04 – Application of general policies of the Australian Government to bodies under the Commonwealth Authorities and Companies Act 1997
- Finance Circular 2005/05 – Investment of surplus money
- Australian Government Property Ownership Framework
- The Protective Security Manual 2005
- Finance Circular No. 2006/11 – Compliance Reporting – CAC Act Bodies.
- Statement of Expectations – September 2007.

SRDC is complying with the notified policies.

Industry levy rates

Funding of SRDC is by levies from industry, with matching Australian Government contributions up to 0.5 per cent of the gross value of production (GVP). Levies are imposed under Schedule 24 of the *Primary Industries (Excise) Levies Act 1999* and collected under the *Primary Industries Levies and Charges Collection Act 1991*. In 2006–07 the levy was \$0.14 per tonne of sugarcane crushed, divided equally between growers and millers.

Environment Protection and Biodiversity Conservation Act

SRDC's obligations under section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) require consideration of the environmental impacts of proposals and projects. Research project proponents are required to outline potential risks relating to the project, and appropriate management strategies.

These are considered during assessment of proposals by Working Parties and the Board. Potential and/or actual impacts of existing projects are considered during the assessment of milestone reports and project reviews. No proposals or projects with adverse environmental consequences were identified in 2007–08. SRDC is also required under the EPBC Act to report on how SRDC's actions accord with the principles of ecologically sustainable development. This report was provided in Section 4 of this Annual Report.

Privacy Commission

SRDC complied with all obligations to the Privacy Commission in 2006–07.

Freedom of Information

SRDC received no enquiries under the Freedom of Information (FOI) Act in 2007–08.

Occupational Health and Safety

SRDC's policy is to conduct its activities in such a way as to provide an environment which protects the health, safety and welfare of staff and visitors and actively encourages safe working practices. SRDC's OH&S Management System sets out SRDC's OH&S policies and establishes procedures for planning, implementation, monitoring and review of OH&S matters.


No health and safety issues required external reporting during 2007–08.

Australian Government Disability Strategy

The principles of the Australian Government Disability Strategy provide that people with disabilities should have equity of participation, the right to inclusion in all Australian programs, the right to participation in decision making processes, and have access to information in appropriate formats. In addition, all Australian organisations are accountable for the provision of access for people with disabilities.

In May 2003, the Board approved the SRDC Disability Action Plan to implement the Australian Government Disability Strategy. The Action Plan noted that the SRDC office in Brisbane is fully accessible to people with physical disabilities. Information on the SRDC website is available in PDF format, making it easily accessible to people with disabilities.

SRDC's employment policies do not discriminate against disabled persons.



5. Selection Committee Report

The Hon. Tony Burke MP
Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Minister

Sugar Research and Development Corporation (SRDC) Selection Committee Report 2008

This report summarises the activities of the SRDC Selection Committee from October 2007 to June 2008, pursuant to section 141 of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act), in relation to the nomination of seven directors for appointment to the board of the SRDC.

Establishment of Selection Committee

The SRDC Selection Committee was established under the PIERD Act for the purpose of nominating to you seven persons for appointment as directors of the SRDC board.

In addition to six expiring nominated director positions, a further position was available for filling following legislative amendments to the PIERD Act, made in 2007. The amendments, among other things, remove the government director position from the board, allow for an additional non-executive director position and expand the skills criteria to include skills in public administration.

I was appointed as the Presiding Member on 11 October, 2007, for the period ending 30 June, 2010. On 15 February, 2008 you appointed Messrs Alf Cristaudo, Ian McMaster AM and Ross Walker and Ms Anne Story following nominations made to you by the SRDC's three representative industry organizations: Australian Cane Growers' Council Ltd; Australian Sugar Milling Council Pty Ltd; and Australian Cane Farmers' Association Ltd.

Ms Anne Story acted as an Independent Member of the Selection Committee.

Selection process

The Selection Committee advertised the 7 board positions widely, in the national and local press and industry newsletters. The advertisements called for written applications against the selection criteria contained in the PIERD Act, which included:

- Sugar cane production, processing and marketing
- Science, technology and technology transfer
- Management and conservation of natural resources, including environmental and ecological matters
- Administration of research and development projects
- Economics
- Finance and business management
- Sociology
- Public administration.

Advertisements were placed in the following:

The Australian Canegrower
The Australian Financial Review
The Weekend Australian
Townsville Bulletin

Mackay Daily Mercury
Bundaberg News Mail
Brisbane Courier Mail
Cairns Post

The SRDC's representative industry organisations were also invited to nominate candidates, the existing directors were invited to apply and a search of the Department of Agriculture, Fisheries and Forestry's *Balance* database was conducted. A total of 64 applications were received, of which 10 were received from female applicants and three from existing directors.

The Selection Committee ensured through the print media, data base searches, and contact with institutions, groups and individuals that, as far as practicable, all available potential candidates were made aware of the positions. Approximately 117 phone or e-mail inquiries were received.

At the outset of the process, the SRDC Selection Committee consulted widely to obtain an overview of industry challenges and skill requirements of the new board, in addition to the core skills contained in the PIERD Act. The Chair of the SRDC was consulted on several occasions in accordance with section 131(1A) of the PIERD Act.

The SRDC Selection Committee held several phone and e-mail discussions to review the process, to receive appropriate briefings and to review the applications. The Selection Committee agreed on 14 candidates for interview, including three women and one existing board director.

Interviews were held on 19 and 20 March, 2008 in the SRDC Boardroom in Brisbane and a subsequent telephone interview was held on 27 March, 2008.

Following interviews the Selection Committee made its final decisions taking into account the collective balance of expertise and experience in board affairs required by the PIERD Act.

Board appointments

Upon completion of the selection process, the SRDC Selection Committee reported to you on 27 March, 2008 with seven nominations for your consideration, in accordance with sections 130-132 of the PIERD Act. You agreed to the seven nominations made by the SRDC Selection Committee.

The following six appointments were completed by you, for a term commencing from 8 May, 2008 and ending on 30 April, 2011:

- Stephen Guazzo, reappointment of Queensland,
- Michael Braude, new appointment, of New South Wales
- David Campbell, new appointment, of Victoria
- Caroline Coppo, new appointment, of Queensland
- Ian Sampson, new appointment, of Queensland
- Angela Williams, new appointment, of Queensland.

In addition you completed the appointment of Anthony Pressland, a new appointment, of Queensland for a term commencing from 7 July, 2008 and ending on 30 April, 2011.

I formally abolished the SRDC Selection Committee pursuant to section 129 of the PIERD Act on 16 July, 2008

Expenses


Item	\$
Selection committee's travel and expenses	6,398.11
Applicants' travel and expenses	2,020.72
Advertising	14,408.82
Presiding Member's fees	31,385.20
Independent Member's fee	2,200.00
Administration	460.12
TOTAL (INCLUDING GST)	58,872.97

There were no secretarial fees as these services were provided by the Presiding Member.



Dr Kevin P Sheridan AO
Presiding Member

SRDC Selection Committee
16 July, 2008



6. Financial Statements

for the Year Ended 30 June 2008



INDEPENDENT AUDITOR'S REPORT

To the Minister for Agriculture, Fisheries and Forestry

Scope

I have audited the accompanying financial statements of the Sugar Research and Development Corporation for the year ended 30 June 2008, which comprise: a Statement by the Chief Executive; Income Statement; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments; Schedule of Contingencies and Index to the Notes to the Financial Statements, including a Summary of Significant Accounting Policies.

The Responsibility of the Board of Directors for the Financial Statements

The Sugar Research and Development Corporation's Executive Director is responsible for the preparation and fair presentation of the financial statements in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards (which include the Australian Accounting Interpretations). This responsibility includes establishing and maintaining internal control relevant to the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. These Auditing Standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Corporation's preparation and fair presentation of

the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Corporation's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Corporation's Executive Director, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

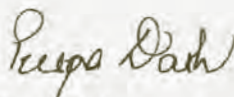
In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the requirements of the Australian accounting profession.

Auditor's Opinion

In my opinion, the financial statements of the Sugar Research and Development Corporation:

- (a) have been prepared in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards; and
- (b) give a true and fair view of the matters required by the Finance Minister's Orders including the Sugar Research and Development Corporation's financial position as at 30 June 2008 and its financial performance and cash flows for the year then ended.

Australian National Audit Office



Puspa Dash
Acting Executive Director

Delegate of the Auditor-General

Canberra
10 September 2008

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
STATEMENT BY THE CHIEF EXECUTIVE

In our opinion, the attached financial statements for the year ended 30 June 2008 are based on properly maintained financial records and give a true and fair view of the matters required by the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Corporation will be able to pay its debts as and when they become due and payable.

This statement is made in accordance with a resolution of the directors.



I Knop
Chairman

4 September 2008



F Botha
Executive Director

4 September 2008



R Troedson
Operations Manager

4 September 2008

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
 INCOME STATEMENT
 for the year ended 30 June 2008

	Notes	2008 \$'000	2007 \$'000
INCOME			
Revenue			
Revenue from Government	3A	6,283	5,522
Interest	3B	803	726
Industry contributions (sugar levies)	3C	5,028	4,887
Other revenues	3D	44	-
Total revenue		12,158	11,135
Total income		12,158	11,135
EXPENSES			
Employee benefits	4A	1,028	948
Suppliers	4B	895	722
Depreciation and amortisation	4C	18	23
Losses from asset sales	4D	13	7
Grants	4E	9,139	9,024
Total expenses		11,093	10,724
Surplus (Deficit)		1,065	411

The above statement should be read in conjunction with the accompanying notes.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
BALANCE SHEET
as at 30 June 2008

	Notes	2008 \$'000	2007 \$'000
ASSETS			
Financial assets			
Cash and cash equivalents	5A	65	951
Trade and other receivables	5B	3,031	248
Investments	5C	8,052	7,943
Total financial assets		11,148	9,142
Non-financial assets			
Leasehold improvements	6A	81	-
Plant and equipment	6B	26	73
Other non-financial assets	6D	18	7
Total non-financial assets		125	80
Total assets		11,273	9,222
LIABILITIES			
Payables			
Suppliers	7A	82	49
Grants	7B	429	411
Other payables	7C	1,000	-
Total payables		1,511	460
Provisions			
Employee provisions	8A	154	219
Total provisions		154	219
Total liabilities		1,665	679
Net assets		9,608	8,543
EQUITY			
Reserves		2	2
Retained surplus (accumulated deficit)		9,606	8,541
Total equity		9,608	8,543
Current assets		11,166	9,149
Non-current assets		107	73
Current liabilities		1,651	575
Non-current liabilities		14	104

The above statement should be read in conjunction with the accompanying notes.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
 STATEMENT of CHANGES in EQUITY
 as at 30 June 2008

Item	Retained Earnings		Asset Revaluation Reserves		Total Equity	
	2008 \$'000	2007 \$'000	2008 \$'000	2007 \$'000	2008 \$'000	2007 \$'000
Opening balance						
Balance carried forward from previous period	8,541	8,144	2	2	8,543	8,146
Adjustment for changes in accounting policies	-	(14)	-	-	-	(14)
Adjusted opening balance	8,541	8,130	2	2	8,543	8,132
Surplus (Deficit) for the period	1,065	411	-	-	1,065	411
Total income and expenses	1,065	411	-	-	1,065	411
Closing balance at 30 June	9,606	8,541	2	2	9,608	8,543

The above statement should be read in conjunction with the accompanying notes.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
 CASH FLOW STATEMENT
 for the year ended 30 June 2008

	Notes	2008 \$'000	2007 \$'000
OPERATING ACTIVITIES			
Cash received			
Industry contributions (sugar levies)		4,823	5,074
Revenue from Government		5,035	5,522
Interest		785	748
Net GST received		562	1,022
Other		45	-
Total cash received		11,250	12,366
Cash used			
Employees		792	645
Suppliers		1,227	895
Grants		9,943	10,045
Total cash used		11,962	11,585
Net cash flows from (used by) operating activities	9	(712)	781
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of plant and equipment		37	35
Total cash received		37	35
Cash used			
Purchase of plant and equipment		102	71
Total cash used		102	71
Net cash flows from (used by) investing activities		(65)	(36)
Net increase (decrease) in cash held		(777)	745
Cash and cash equivalents at the beginning of the reporting period		8,894	8,149
Cash and cash equivalents at the end of the reporting period	5A	8,117	8,894

The above statement should be read in conjunction with the accompanying notes.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
SCHEDULE OF COMMITMENTS
as at 30 June 2008

	2008	2007
	\$'000	\$'000
BY TYPE		
Commitments receivable		
GST recoverable on commitments	1,979	2,297
Total commitments receivable	(1,979)	(2,297)
Operating lease commitments payable		
Operating leases ¹	904	1,086
Other commitments payable		
Research and development grants - PIERD	20,864	24,177
Net commitments by type	19,789	22,966
BY MATURITY		
Commitments receivable		
One year or less	(1,000)	(1,116)
From one to five years	(932)	(1,181)
Over five years	(47)	-
Total commitments receivable	(1,979)	(2,297)
Operating lease commitments payable		
One year or less	214	182
From one to five years	690	904
Total operating lease commitments payable	904	1,086
Other commitments payable		
One year or less	10,781	12,089
From one to five years	9,565	12,088
Over five years	518	-
Total other commitments payable	20,864	24,177
Net commitments by maturity	19,789	22,966

NB: Commitments are GST inclusive where relevant.

¹ Operating leases included are effectively non-cancellable and comprise:

Leases for office accommodation

Lease payments are subject to annual increases of 5%. The initial periods of office accommodation leases are still current.

The above schedule should be read in conjunction with the accompanying notes.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
SCHEDULE OF CONTINGENCIES
as at 30 June 2008

Contingent liabilities	Bank Guarantees	
	2008	2007
	\$'000	\$'000
Balance from previous period	18	18
<i>Total contingent liabilities</i>	18	18

No contingent assets exist as at 30 June 2008.

Details of contingent liabilities, including those not included above because they cannot be quantified or considered remote, are disclosed in **Note 10: Contingent liabilities and assets**.

The above schedule should be read in conjunction with the accompanying notes.

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Note 1: Summary of Significant Accounting Policies

1.1 Objectives of Sugar Research and Development Corporation

The objective of Sugar Research and Development Corporation (the Corporation) is to foster an innovative and sustainable Australian sugar industry through targeted investment in research and development.

The Corporation's corporate outcome expresses the overall goal of a profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.

The financial statements and notes are required by clause 1(b) of schedule 1 to the *Commonwealth Authorities and Companies Act 1997* and are a General Purpose Financial Report.

The continued existence of the Corporation in its present form and with its present programs is dependent on Government policy and on continuing appropriations by Parliament for the Corporation's administration and programs.

The financial statements and notes have been prepared in accordance with:

Finance Minister's Orders (or FMOs) for reporting periods ending on or after 1 July 2007; and

Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board that apply for the reporting period.

The financial statements have been prepared on an accrual basis and is in accordance with historical cost convention, except for certain assets at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The financial statements are presented in Australian dollars and values are rounded to the nearest thousand dollars unless disclosure of the full amount is specifically required.

Unless an alternative treatment is specifically required by an Accounting Standard or the FMOs, assets and liabilities are recognised in the Balance Sheet when and only when it is probable that future economic benefits will flow to the Corporation and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under agreements equally proportionately unperformed are not recognised unless required by an Accounting Standard.

Unless alternative treatment is specifically required by an Accounting Standard, revenues and expenses are recognised in the Income Statement when, and only when, the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 Significant accounting judgement and estimates

In the process of applying the accounting policies listed in this note, no accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period.

1.3 Statement of compliance

Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date as stated in the standard. The following new standard is applicable to the current reporting period:

Financial instrument disclosure

AASB 7 *Financial Instruments: Disclosures* is effective for reporting periods beginning on or after 1 January 2007 (the 2007–08 financial year) and amends the disclosure requirements for financial instruments. In general, AASB 7 requires greater disclosure than that previously required. Associated with the introduction of AASB 7 a number of accounting standards were amended to reference the new standard or remove the present disclosure requirements through 2005-10 Amendments to Australian Accounting Standards [AASB 132, AASB 101, AASB 114, AASB 117, AASB 133, AASB 139, AASB 1, AASB 4, AASB 1023 & AASB 1038]. These changes have no financial impact but will affect the disclosure presented in future financial statements.

The following new standards, amendments to standards or interpretations for the current financial year have no material financial impact on the Corporation.

2007-4 Amendments to Australian Accounting Standards arising from ED 151 and Other Amendments and Erratum: Proportionate Consolidation

2007-7 Amendments to Australian Accounting Standards

UIG Interpretation 11 AASB 2 - Group and Treasury Share Transactions and 2007-1 Amendments to Australian Accounting Standards arising from AASB Interpretation 11

Future Australian Accounting Standard requirements

The following new standards, amendments to standards or interpretations have been issued by the Australian Accounting Standards Board but are effective for future reporting periods. It is estimated that the impact of adopting these pronouncements when effective will have no material financial impact on future reporting periods.

AASB Interpretation 12 Service Concession Arrangements and 2007-2 Amendments to Australian Accounting Standards arising from AASB Interpretation 12

AASB 8 Operating Segments and 2007-3 Amendments to Australian Accounting Standards arising from AASB 8

2007-6 Amendments to Australian Accounting Standards arising from AASB 123

AASB Interpretation 13 Customer Loyalty Programmes

AASB Interpretation 14 AASB 119 - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction

Other

The following standards and interpretations have been issued but are not applicable to the operations of the Corporation.

AASB 1049 Financial Reporting of General Government Sectors by Governments

AASB 1049 specifies the reporting requirements for the General Government Sector. The FMOs do not refer to this standard as it contains guidance applicable to the consolidated financial statements of the Australian Government, rather than financial statements of individual agencies or authorities.

1.4 Revenue

Revenue is predominantly derived from levies collected from the sugar industry with matching Commonwealth Contributions in accordance with the Primary Industries and Energy Research and Development Act 1989 (PIERD).

PIERD Commonwealth Contribution revenue is recognised based on a percentage of monthly expenditure incurred by the Corporation, subject to a cap of 0.5% of the Gross Value of Production.

Revenues from Government

Amounts appropriated for Departmental outputs appropriations for the year (adjusted for any formal additions and reductions) are recognised as revenue when the agency gains control of the appropriation, except for certain amounts which relate to activities that are reciprocal in nature, in which case revenue is recognised only when it has been earned.

Appropriations receivable are recognised at their nominal amounts.

The Corporation has received additional funding as part of the Regional and Community Projects (RCP) initiative run by the Australian Government to improve the production and performance of sugarcane varieties. The Corporation has selected a project which is to be supported by this additional funding.

1.5 Gains

Sale of assets

Gains from disposal of non-current assets are recognised when control of the asset has passed to the buyer.

1.6 Transactions with the Government as owner

Equity injections

Amounts appropriated which are designated as 'equity injections' for a year (less any formal reductions) are recognised directly in Contributed Equity in that year.

There are no equity injections from the Government in the 2008 financial year, (2007: nil).

1.7 Employee benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for 'short-term employee benefits' (as defined in AASB 119) and termination benefits due within twelve months of balance date are measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

All other employee benefit liabilities are measured as the present value of the estimated future cash outflows to be made in respect of services provided by employees up to the reporting date.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the Corporation is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration, including the Corporation's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Superannuation

Staff of the Corporation are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap).

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported by the Department of Finance and Administration as an administered item.

The Corporation makes employer contributions to the Employee Superannuation Scheme at rates determined by an actuary to be sufficient to meet the cost to the Government of the superannuation entitlements of the Corporation's employees. The Corporation accounts for the contributions as if they were contributions to defined contribution plans.

The liability for superannuation recognised as at 30 June represents outstanding contributions for the final 2 days of the year.

1.8 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased non-current assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

Operating lease payments are expensed on a straight line basis which is representative of the pattern of benefits derived from the leased assets.

The Corporation has no finance leases.

1.9 Grants

Most grant agreements require the grantee to perform services, provide facilities or meet eligibility criteria. In these cases, the Corporation recognises grant liabilities only to the extent that the services required have been performed or the eligibility criteria have been satisfied by the grantee.

In cases where grant agreements are made without conditions to be monitored, liabilities are recognised on signing the agreement.

Grants expenses are recognised when a milestone is approved.

1.10 Cash

Cash and cash equivalents means notes and coins held and any deposits with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value. Cash is recognised at its nominal amount.

For purposes of the Cash Flow Statement, cash includes monies on short term deposit with a bank as the deposits are of short term duration and are used in the day to day management of the business.

1.11 Financial assets

The Corporation classifies its financial assets in the following categories:

'held-to-maturity investments',
'loans and receivables'.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Financial assets are recognised and derecognised upon 'trade date'.

Effective interest method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Held-to-maturity investment

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are recorded at amortised cost using the effective interest method less impairment, with revenue recognised on an effective yield basis.

Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. They are included in current assets, except for maturities greater than 12 months after the balance sheet date. These are classified as non-current assets. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

Impairment of financial assets

Financial assets are assessed for impairment at each balance date.

Financial assets held at amortised cost - If there is objective evidence that an impairment loss has been incurred for loans and receivables or held-to-maturity investments held at amortised cost, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the asset's original effective interest rate. The carrying amount is reduced by way of an allowance account. The loss is recognised in the Income Statement.

1.12 Financial liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities.

Financial liabilities are recognised and derecognised upon 'trade date'.

Supplier and other payables

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

1.13 Contingent liabilities and contingent assets

Contingent liabilities and contingent assets are not recognised in the Balance Sheet but are reported in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

1.14 Acquisition of assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and revenues at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor Agency's accounts immediately prior to the restructuring.

1.15 Plant and equipment

Change in accounting policy

The policy of writing off plant and equipment with net book values of less than \$2,000 at year end was adopted for the first time in the current financial year.

The change in the accounting policy was recommended by the Executive Director and subsequently approved by the Board on 9 May 2007. The new policy has been applied retrospectively and comparative information in relation to the 2007 financial year has been restated accordingly.

The effect of the above prior period adjustments was to decrease opening retained surpluses for the year ended 30 June 2007 by \$13,930. Gross book value of plant and equipment decreased by \$34,614 and accumulated depreciation/amortisation and impairment decreased by \$20,684 in the year ended 30 June 2007. The net effect on the net book value of plant and equipment at 30 June 2007 was a decrease of \$13,930.

Asset recognition threshold

Purchases of plant and equipment are recognised initially at cost in the Balance Sheet, except for purchases costing less than \$2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

Revaluations

Fair values for each class of asset are determined as shown below:

Leasehold improvements	Depreciated replacement cost
Plant and equipment	Market selling price

Following initial recognition at cost, plant and equipment are carried at fair value less accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised through operating result. Revaluation decrements for a class of assets are recognised directly through operating result except to the extent that they reverse a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

Depreciation

Depreciable plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Corporation using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives) and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	<u>2008</u>	<u>2007</u>
Computer equipment	3 years	3 years
Furniture and fittings	13 1/3 years	13 1/3 years
Leasehold improvements	Lease term	Lease term
Motor vehicles	6 2/3 years	6 2/3 years

Impairment

All assets were assessed for impairment at 30 June 2008. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs to sell and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the Corporation were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

1.16 Taxation

The Corporation is exempt from all forms of taxation except fringe benefits tax (FBT) and the goods and services tax (GST).

Revenues, expenses and assets are recognised net of GST:

- except where the amount of GST incurred is not recoverable from the Australian Taxation Office; and
- except for receivables and payables.

Note 2: Events after the balance sheet date

No events have occurred after balance date that affect the Corporation's 2007–08 financial statements.

Note 3: Income

Revenue

Note 3A: Revenue from Government

Commonwealth contribution - FMS	-	214
Commonwealth contribution - PIERD Act	5,283	5,308
Commonwealth contribution - RCP	1,000	-
Total revenue from Government	6,283	5,522

Note 3B: Interest

Cash at bank	117	85
Short term deposits	686	641
Total interest	803	726

Note 3C: Industry contributions (sugar levies)

Industry contributions (sugar levies)	5,028	4,887
Total industry contributions (sugar levies)	5,028	4,887

Note 3D: Other revenues

Royalties	44	-
Total other revenues	44	-

Note 4: Expenses

Note 4A: Employee benefits

Wages and salaries	917	715
Superannuation:		
Defined contribution plans	118	110
Leave and other entitlements	(58)	73
Other employee expenses	51	50
Total employee benefits	1,028	948

Note 4B: Suppliers

Provision of goods - external parties	38	41
Rendering of services - external parties	688	601
Operating lease rentals: minimum lease repayments	168	78
Workers' compensation premium	1	2
Total supplier expenses	895	722

Note 4C: Depreciation and amortisation

Depreciation:		
Plant and equipment	11	18
Leasehold improvements	7	5
Total depreciation	18	23

Note 4D: Losses from asset sales

Plant and equipment:

Proceeds from disposal	(37)	(35)
Net book value of assets disposed	50	42
Total losses from asset sales	13	7

Note 4E: Grants

The Corporation makes grants to support research and development for the sugar industry in Australia.

Research and development grants - PIERD	9,139	9,024
Total grants	9,139	9,024

Note 5: Financial Assets

Note 5A: Cash and cash equivalents

Cash at bank or on deposit	65	951
Total cash and cash equivalents	65	951

Note 5B: Trade and other receivables

GST receivable from the Australian Taxation Office	75	196
Goods and services	1,100	-
Levies receivable	241	36
Commonwealth contribution receivable	1,348	-
Interest receivable	256	16
FBT refund receivable from the Australian Taxation Office	11	-
Total trade and other receivables (net)	3,031	248

All receivables are current assets.

Receivables (gross) are aged as follows:

Not overdue	3,031	248
Total receivables (gross)	3,031	248

There are no impairment allowances as at 30 June 2008.

Note 5C: Investments

Deposits	8,052	7,943
Total investments	8,052	7,943

All investments are current assets.

Note 6: Non-Financial Assets

Note 6A: Leasehold improvements

Leasehold improvements

- at fair value	88	-
- accumulated depreciation	(7)	-

Total leasehold improvements

81	-
----	---

Note 6B: Plant and equipment

Plant and equipment:

- at fair value	40	82
- accumulated depreciation	(14)	(9)

Total plant and equipment

26	73
----	----

All revaluations are conducted in accordance with the revaluation policy stated in Note 1.

No indicators of impairment were found for leasehold improvements, plant and equipment.

Note 6C: Analysis of property, plant and equipment

TABLE A - Reconciliation of the opening and closing balances of property, plant and equipment (2007–08)

Item	Leasehold improvements \$'000	Plant & equipment \$'000	Total \$'000
As at 1 July 2007			
Gross book value	-	82	82
Accumulated depreciation/amortisation and impairment	-	(9)	(9)
Net book value 1 July 2007	-	73	73
Additions:			
by purchase	88	14	102
Depreciation/amortisation expense	(7)	(11)	(18)
Disposals:			
Other disposals	-	(50)	(50)
Net book value 30 June 2008	81	26	107
Net book value as of 30 June 2008 represented by:			
Gross book value	88	40	128
Accumulated depreciation/amortisation and impairment	(7)	14)	(21)
	81	26	107

TABLE A - Reconciliation of the opening and closing balances of property, plant and equipment (2006–07)

Item	Leasehold improvements \$'000	Plant & equipment \$'000	Total \$'000
As at 1 July 2006			
Gross book value	14	94	108
Accumulated depreciation/amortisation and impairment	(8)	(18)	(26)
Net book value 1 July 2006	6	76	82
Additions:			
By purchase	-	71	71
Depreciation/amortisation expense	(5)	(18)	(23)
Disposals:			
Other disposals	-	(43)	(43)
Net book value less than \$2,000	(1)	(13)	(14)
Net book value 30 June 2007	-	73	73
Net book value as of 30 June 2007 represented by:			
Gross book value	-	82	82
Accumulated depreciation/amortisation and impairment	-	(9)	(9)
	-	73	73

Note 6D: Other non-financial assets

Prepayments	18	7
Total other non-financial assets	18	7

All other non-financial assets are current assets.

No indicators of impairment were found for other non-financial assets.

Note 7: Payables

Note 7A: Suppliers

Trade creditors	82	49
Total suppliers payable	82	49

All supplier payables are current liabilities.

Note 7B: Grants payable

Grants payable	429	411
Total grants payable	429	411

All grants payable are current liabilities.

Note 7C: Other payables

Revenue received in advance	1,000	-
Total other payables	1,000	-

All other payables are current liabilities.

Note 8: Provisions

Note 8A: Employee provisions

Salaries and wages	7	4
Leave	146	214
Superannuation	1	1
Total employee provisions	154	219
Employee provisions are represented by:		
Current	140	115
Non-current	14	104
Total employee provisions	154	219

The classification of current includes amounts for which there is not an unconditional right of deferral of one year, hence in the case of employee provisions the above classification does not equal the amount expected to be settled within one year of reporting date. Employee provisions expected to be settled in one year \$62,235 (2007: \$11,857), in excess of one year \$92,099 (2007: \$207,157).

Note 9: Cash flow reconciliation

Reconciliation of cash and cash equivalents as per balance sheet to cash flow statement

Cash Flows Statement comprises of Balance Sheet items:

Cash	65	951
Investments	8,052	7,943
	8,117	8,894

Reconciliation of operating result to net cash from operating activities:

Operating result	1,065	411
Depreciation/amortisation	18	23
Loss from disposal of assets	13	7
(Increase) / decrease in net receivables	(2,783)	357
(Increase) / decrease in prepayments	(11)	45
Increase / (decrease) in employee provisions	(65)	44
Increase / (decrease) in supplier payables	33	(35)
Increase / (decrease) in grants payable	18	(71)
Increase / (decrease) in other payables	1,000	-
Net cash from / (used by) operating activities	(712)	781

Note 10: Contingent liabilities and assets

The Schedule of Contingencies in the financial statements reports a contingent liability as at 30 June 2008 being a bank guarantee of \$18,000 provided over the lease of the head office premises occupied in Level 16/141 Queen Street, Brisbane.

At 30 June 2008, the Corporation had no unquantifiable contingencies.

Note 11: Directors remuneration

	<u>2008</u>	<u>2007</u>
The number of directors of the Corporation included in these figures are shown below in the relevant remuneration bands:		
\$ Nil to \$14,999	6	1
\$15,000 to \$29,999	6	6
\$30,000 to \$44,999	-	1
\$65,000 to \$79,999	1	-
\$125,000 to \$139,999	1	-
\$180,000 to \$194,999	-	1
Total number of directors of the Corporation	<u>14</u>	<u>9</u>
Total remuneration received or due and receivable by directors of the Corporation	<u>\$344,408</u>	<u>\$345,993</u>

Part-time directors and the Chairman of the Corporation received fees and allowances as determined by the Remuneration Tribunal. The Executive Director is the only full-time director of the Corporation and receives a salary and allowances as approved by the Board. Remuneration includes salary, allowances and superannuation.

Note 12: Related party disclosures

The aggregate remuneration of Directors is disclosed in Note 11. During the 2008 year, no Director of the Corporation served on the Board of a related party.

Note 13: Executive remuneration

	<u>2008</u>	<u>2007</u>
The number of senior executives who received or were due to receive total remuneration of \$130,000 or more:		
\$190,000 to \$204,999	-	1
Total	<u>-</u>	<u>1</u>
	<u>\$</u>	<u>\$</u>
The aggregate amount of total remuneration of executives shown above.	-	198,280
The aggregate amount of separation and redundancy/termination benefit payments during the year to executives shown above.	-	-

The aggregate amount of Executive Director remuneration is disclosed in Note 11.

Note 14: Remuneration of auditors

	2008	2007
	\$'000	\$'000
Financial statement audit services provided to the Corporation	<u>15</u>	<u>26</u>
	<u>15</u>	<u>26</u>

No other services were provided by the Auditor-General.

Note 15: Financial Instruments

Note 15A: Categories of financial instruments

Financial assets

Loans and receivables

Cash at bank or on deposit	65	951
Receivables for goods and services	1,100	-
Interest receivable	256	16
Investments	<u>8,052</u>	<u>7,943</u>
Carrying amount of financial assets	<u>9,473</u>	<u>8,910</u>

Financial liabilities

Other financial liabilities

Trade creditors	82	49
Grants payable	429	411
Carrying amount of financial liabilities	<u>511</u>	<u>460</u>

Note 15B: Net income and expense from financial assets

Loans and receivables

Interest revenue	<u>803</u>	<u>726</u>
Net gain/(loss) loans and receivables	<u>803</u>	<u>726</u>
Net gain/(loss) from financial assets	<u>803</u>	<u>726</u>

Note 15C: Fair values of financial instruments

	Carrying Amount 2008 \$'000	Fair Value 2008 \$'000	Carrying Amount 2007 \$'000	Fair Value 2007 \$'000
FINANCIAL ASSETS				
Cash	65	65	951	951
Interest receivable	256	256	16	16
Other receivables	1,100	1,100	-	-
Term deposits	8,052	8,052	7,943	7,943
Total	9,473	9,473	8,910	8,910
FINANCIAL LIABILITIES				
Trade creditors	82	82	49	49
Grants payable	429	429	411	411
Total	511	511	460	460

Note 15D: Credit risk

The Corporation is exposed to minimal credit risk as the majority of loans and receivables are cash, appropriations made under law. The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This amount is equal to the total amount of trade receivables (2008: \$1,100,000 and 2007: \$nil). The Corporation has assessed that there is no risk of default and has not recognised an impairment allowance.

The Corporation holds no collateral to mitigate against credit risk.

Credit quality of financial instruments not past due or individually determined as impaired:

	Not Past due nor impaired 2008 \$'000	Not Past due nor impaired 2007 \$'000
Cash at bank or on deposit	65	951
Receivables for goods and services	1,100	-
Interest receivable	256	16
Investments	8,052	7,943
Total	9,473	8,910

There are no financial assets that are past due or impaired for 2007 or 2008.

Note 15E: Liquidity risk

The Corporation's financial liabilities are payables for goods and services. The exposure to liquidity risk is based on the notion that the Corporation will encounter difficulty in meeting its obligations associated with financial liabilities. This is highly unlikely due to internal policies and procedures put in place to ensure there are appropriate resources to meet its financial obligations.

The following tables illustrates the maturities for financial liabilities:

	On demand 2008 \$'000	within 1 year 2008 \$'000	1 to 5 years 2008 \$'000	> 5 years 2008 \$'000	Total 2008 \$'000
Trade creditors	-	82	-	-	82
Grants payable	-	429	-	-	429
Total	-	511	-	-	511

	On demand 2007 \$'000	within 1 year 2007 \$'000	1 to 5 years 2007 \$'000	> 5 years 2007 \$'000	Total 2007 \$'000
Trade creditors	-	49	-	-	49
Grants payable	-	411	-	-	411
Total	-	460	-	-	460

The Corporation is appropriated funding from the Australian Government. The Corporation manages its budgeted funds to ensure it has adequate funds to meet payments as they fall due. In addition, the Corporation has policies in place to ensure timely payments are made when due and has no past experience of default.

Note 15F: Market risk

The Corporation holds basic financial instruments that do not expose the Corporation to certain market risks. The Corporation is not exposed to 'currency risk' or 'other price risk'.

Note 16: Reporting of outcomes

The Corporation core business is 'to foster an innovative and sustainable Australian sugar industry through targeted investment in research and development'.

The Corporation is structured to meet one outcome; 'A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities'.

Four Output groups have been identified as contributing to the one corporate outcome:

- 1.1. Whole of system solutions based on integrated management of the value chain, particularly at mill area and regional areas (Program A).
- 1.2. Sustainable sugarcane production systems based on integrated management of resources at farm level (Program B).
- 1.3. Flexible, cost effective systems for sustainable harvest, transport, milling and marketing based on innovative design (Program C).
- 1.4. Enhanced human capacity for change, learning and innovation in the sugar industry (Program D).

The actual grant expenses of the Outcomes is applied to the four output groups. All other revenues and expenses are allocated on a proportionate basis.

Note 16A: Net cost of outcome delivery

	Outcome 1		Total	
	2008 \$'000	2007 \$'000	2008 \$'000	2007 \$'000
Expenses				
Administered expenses	-	-	-	-
Departmental expenses	11,093	10,724	11,093	10,724
Total expenses	11,093	10,724	11,093	10,724
Costs recovered from provision of goods and services to the non-government sector				
Administered	-	-	-	-
Departmental	-	-	-	-
Total costs recovered	-	-	-	-
Other external revenues				
Administered				
Departmental				
Sales of goods and services income from related entities	5,028	4,887	5,028	4,887
Interest	803	726	803	726
Other	44	-	44	-
Total other external revenues	5,875	5,613	5,875	5,613
Net cost/(contribution) of outcome	5,218	5,111	5,218	5,111

Note 16B: Major classes of departmental income and expenses by output groups and outputs

Outcome 1	Output 1		Output 2		Output 3	
	2008	2007	2008	2007	2008	2007
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Departmental expenses						
Employees	154	142	504	465	175	161
Suppliers	134	108	439	354	152	123
Grants	1,371	1,354	4,478	4,422	1,554	1,534
Depreciation and amortisation	3	4	9	11	3	4
Losses from asset sales	2	1	6	3	2	1
Total departmental expenses	1,664	1,609	5,436	5,255	1,886	1,823
Funded by:						
Revenues from Government	942	828	3,078	2,706	1,068	939
Interest	120	109	393	355	136	123
Industry contributions (sugar levies)	754	733	2,464	2,395	855	831
Other	7	-	22	-	8	-
Total departmental revenues	1,823	1,670	5,957	5,456	2,067	1,893

Outcome 1 (continued)	Output 4		Outcome 1 Total	
	2008	2007	2008	2007
	\$'000	\$'000	\$'000	\$'000
Departmental expenses				
Employees	195	180	1,028	948
Suppliers	170	137	895	722
Grants	1,736	1,714	9,139	9,024
Depreciation and amortisation	3	4	18	23
Losses from asset sales	3	2	13	7
Total departmental expenses	2,107	2,037	11,093	10,724
Funded by:				
Revenues from government	1,195	1,049	6,283	5,522
Interest	154	139	803	726
Industry contributions (sugar levies)	955	928	5,028	4,887
Other	7	-	44	-
Total departmental revenues	2,311	2,116	12,158	11,135



7. Appendices

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Appendix A

Composition of National Research Priorities attributed to each Program 2007–08 (\$'000)

National Research Priorities (NRP)	An Environmentally Sustainable Australia					Promoting and Maintaining Good Health		Frontier Technologies for Building and Transforming Australian Industries			Safeguarding Australia	Total
	A1	A2	A3	A5	A7	B3	B4	C2	C4	C5	D3	
Regional Futures	490	1,057	547	75	76	20	1,194	293	55	922	397	5,126
Emerging Technologies	139	16	100	0	75	50	270	1,882	35	7	0	2,575
People Development	35	0	4	0	2	0	74	52	30	1,271	13	1,482
Total	664	1,073	651	75	153	70	1,537	2,227	121	2,201	410	9,183

Key to NRP Goals in which SRDC has R&D investments

An Environmentally Sustainable Australia

A1: Water – a critical resource
 A2: Transforming existing industries
 A3: Overcoming soil loss, salinity and acidity
 A5: Sustainable use of Australia’s biodiversity
 A7: Responding to climate change and variability

Frontier Technologies for Building and Transforming Australian Industries

C2: Frontier technologies
 C4: Smart information use
 C5: Promoting an innovation culture and economy

Promoting and Maintaining Good Health

B3: Preventive healthcare
 B4: Strengthening Australia’s social and economic fabric

Safeguarding Australia

D3: Protecting Australia from invasive diseases and pests

Appendix B

Composition of Rural Research and Development Priorities attributed to each Program (\$'000 and % values) 2007-08

Rural Research & Development Priorities (RRDP)	Productivity and Adding Value		Supply Chain and Markets		Natural Resource Management		Climate Variability & Climate Change		Biosecurity		Innovation Skills		Technology		Total	
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%
Regional Futures	1,125	12	890	10	1,552	17	83	1	437	5	860	9	180	2	5,126	56
Emerging Technologies	777	8	106	1	133	1	75	1	25	0	83	1	1,375	15	2,575	28
People Development	2	0	80	1	20	0	2	0	13	0	1,301	14	62	1	1,482	16
TOTAL	1,904	21	1076	12	1,705	19	160	2	475	5	2,244	24	1,617	18	9,183	100

Appendix C

Research Project Listing 2007–08

Project	Title	Research Contact	Email address	Funds (2007–08)
Regional Futures				
Value Chain Integration				
BSS264	Adoption of an optimal season length for increased industry profitability	Mr Lawrence DiBella	hcpsl@bigpond.net.au	\$21,000
CGH002	Enhancing efficiency and integration from field to factory in the Herbert	Mr Peter Sheedy	Peter_Sheedy@hbr.canegrowers.com.au	\$248,610
CGT001	Development and implementation of harvest management planning tools for the maximisation of CCS in the Tully district	Mr Trent Stainlay	tulprod@westnet.com.au	\$69,010
CRC005	Understanding the reproductive biology and ecology of sugarcane to manage the safe release of genetically modified cultivars	Dr Graham Bonnett	graham.bonnett@csiro.au	\$158,042
CSR033	Benchmarking harvest group practices in the Burdekin	Mr Daniel Ellis	dellis@csr.com.au	\$54,117
CSR038	Increasing in-mill NIR effectiveness and communicating data to all sectors for improved decision making in the sugarcane value chain	Mr John Markley	j.markley@mkysugar.com.au	\$80,000
CVA002	Managing Climate Variability Program	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$0
CVA003	Managing Climate Variability Program Phase 2	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$0
GTG002	Implementation of the communication plan for the Sugarcane Gene Technology Group	Mr Warren Males	warren.males@qldsugar.com	\$10,000
JCU027	Defeating the Autumn Predictability Barrier	Dr Yvette Everingham	Yvette.everingham@jcu.edu.au	\$62,233
LWA002	National Climate Change Research Strategy for Primary Industries			\$3,280
MAS001	A regional partnership approach to developing a sustainable sugar cane system	Mr Alan Rudd	armossag@bigpond.net.au	\$10,000
MSF002	Implementing integrated harvesting-transport-milling logistics through adoption of optimised road transport scheduling	Mr Peter Downs	peterdowns@marysug.com.au	\$24,700
NSC005	Implementing an integrated sugar system in NSW	Mr Rick Beattie	rbeattie@nswsugar.com.au	\$25,000
OHS003	Farm Health and Safety Joint Venture Phase 3	Ms Bianca Boseley	bboseley@srcd.gov.au	\$20,000
RIR001	Life Cycle Assessment in Rural Industries	Ms Bianca Boseley	bboseley@srcd.gov.au	\$10,000
SRD011	Climate change workshop	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$7,553
WS009	Assessment of regional R&D needs and opportunities	Mrs Claire Power	cpower@srcd.gov.au	\$33,550

Regional Futures

Farming and Harvesting Systems

BBF001	Pilot area-wide natural resource management group- Building grower capacity to understand and better manage groundwater	Mr Enrico Mio	miofarm@tpg.com.au	\$105,699
BPS001	Identifying management zones within cane paddocks: an essential foundation for precision sugarcane agriculture	Dr Ross Coventry	ross@SoilHorizons.com.au	\$201,835
BSS257	GrubPlan 2: Developing improved risk assessment and decision-support systems for managing greyback canegrub	Dr Peter Samson	psamson@bses.org.au	\$80,000
BSS265	Smut-proofing the Australian industry - ensuring a reliable cane supply through reduced genetic vulnerability to sugarcane smut	Mr Barry Croft	bcroft@bses.org.au	\$106,585
BSS266	Optimum canegrub management within new sustainable cropping systems	Dr Peter Samson	psamson@bses.org.au	\$82,000
BSS268	Accelerated adoption of best-practice nutrient management	Dr Bernard Schroeder	bschroeder@bses.org.au	\$106,966
BSS269	A new cropping system for the Central District	Mr Bradley Hussey	bhussey@bses.org.au	\$95,511
BSS270	Regional adoption of alternative harvester configurations for sustainable harvesting efficiency	Mr Cam Whiteing	cwhiteing@bses.org.au	\$43,000
BSS286	Improved sugar-cane farming systems	Dr Alan Garside	alan.garside@csiro.au	\$457,947
BSS294	Whole-farm planning for management of varieties to maximise productivity and reduce losses from diseases	Mr Barry Croft	bcroft@bses.org.au	\$263,099
BSS296	Evaluation of genotypes for a controlled-traffic farming system	Dr Barry Salter	BSalter@bses.org.au	\$172,706
BSS297	Delivering web-based irrigation management	Mr Tony Linedale	tlinedale@bses.org.au	\$121,737
BSS302	Epidemiology studies into sugarcane smut	Dr Robert Magarey	RMagarey@bses.org.au	\$200,000
BSS303	Sugarcane biosecurity integrated plan	Dr Mohamed Sallam	msallam@bses.org.au	\$90,050
BSS304	Cane-grower implemented drying-off irrigation scheduling on the Tableland	Mr David Donald	ddonald@bses.org.au	\$61,948
BSS306	Establishing the second crop cycle into permanent beds	Mr Bradley Hussey	bhussey@bses.org.au	\$115,850
CG013	Growers working together to improve water quality in the Herbert Sugar Industry	Dr Tim Wrigley	tim_wrigley@canegrowers.com.au	\$79,937
CG018	A review of institutional arrangements in the Burdekin Irrigation Area with a view to managing sustainable farming practices in the region	Dr Tim Wrigley	tim_wrigley@canegrowers.com.au	\$55,675
CPI009	New soybean varieties for fallow cropping of sugarcane fields	Dr Andrew James	Andrew.James@csiro.au	\$61,503
CSE011	Improved environmental outcomes and profitability through innovative management of nitrogen	Dr Peter Thorburn	peter.thorburn@csiro.au	\$115,786

CSE012	Adopting systems approaches to water and nutrient management for future cane production in the Burdekin	Dr Peter Thorburn	peter.thorburn@csiro.au	\$87,908
CSE020	Ecosystem services in sugarlands: Where are we now and how can they be enhanced?	Dr Peter Thorburn	peter.thorburn@csiro.au	\$37,395
DPI015	Enhancing an economic way of doing business in the cane industry	Mr Neil Sing	neil.sing@dpi.qld.gov.au	\$64,000
GGP004	Implementation of improved sugarcane farming systems in the Clare area of the Burdekin District	Mr Paul Hatch	hatchlings@austarnet.com.au	\$3,000
GGP007	Controlled traffic farming systems for the North Coast Grower Group	Mr John Fox	zampar@bigpond.com	\$18,000
GGP008	Overcoming barriers to controlled traffic adoption - Managing traffic during conversion to controlled traffic farming systems	Mr Brian Stevens	bnm_stevens@bigpond.com	\$16,000
GGP012	Researching soil health and economics of two farming systems in the Herbert River district	Mr Michael Waring	mjwaring@bigpond.net.au	\$19,700
GGP015	Development of a precision mill mud applicator for a new farming system	Mr Jeff Atkinson	botatk@aussiebroadband.com.au	\$5,700
GGP016	Tully Variety Management Group	Mr Alf Nucifora	tulprod@westnet.com.au	\$17,500
GGP017	Improving soil health in undulating, dryland farms in the Central region	Mr Rino De Boni	rinodb@bigpond.com	\$13,000
GGP018	Nutrient management from variable rate technology in a control traffic system by the Oakenden Grower Group	Mr John Muscat	jjmuscat@orion-online.com.au	\$32,000
GGP019	Increasing productivity and profitability in soldierfly-affected crops in the Pioneer Valley	Mr Paul Argent	pdrargent@mackay.net.au	\$29,500
GGP020	Beach sand to black clay - Adapting technology and best practice for Homebush farming conditions	Mr Tony Bugeja		\$36,000
GGP021	Bed forming utilising GPS guidance by the CAS (Calen and St Helen) Young Farmers Association	Mr Colin Mackenzie	mack_family@bigpond.com	\$2,000
GGP022	Optimising benefits of GPS integration into controlled traffic farming (CTF) system	Mr Gerry Deguara	deguarag@bigpond.com	\$5,500
GGP023	Utilising available technology to better manage yield variability within blocks	Mr Lee Blackburn	blacky@mcs.net.au	\$25,125
GGP024	Validation of fibre cropping in rotation with sugar cane by Mackay Fibre Producers	Mr Joe Muscat	jmuscat@bses.org.au	\$27,050
GGP026	Implementation of a 2M farming system	Mr Rajinder Singh	singh_rajinda@hotmail.com	\$27,000
GGP027	Developing a sediment trapping system in the Silkwood drainage board area (SDBA)	Mr Ian Brooks	farmlts@comnorth.com.au	\$19,000
GGP028	Facilitating enhanced peanut / sugarcane rotations by assessing and managing the issues related to growing peanuts	Mr Don Halpin	Donella1@bigpond.com	\$11,500
GGP029	Mulgrave cane growers strategic grub management: implementing BSES decision-making tools	Mr Jeffrey Day	Mulgrave@canegrowers.com.au	\$20,000

GGP030	Utilising a predictive model for the monitoring and management of canegrubs in the Mackay region by the Mount Kinchant Growers Group	Mr Paul Vassallo	panavass@activ8.net.au	\$40,000
GGP031	Seed To Fuel: Enhancing the value of rotational break crops to produce oil and bio-fuel in the Central region	Mr John Werner	werner_farming@bigpond.com.au	\$0
GGP032	The operation of the two-in-one harvesting attachment in a controlled traffic system	Mr Elio Castellani	yamaha1@bigpond.net.au	\$40,000
GGP034	Profits through Recycling: Pilot processing of sugar industry and community by-products to improve on-farm sustainability	Mr Neal Ross	jr.cqfcoop@qld.chariot.net.au	\$40,000
GGP035	Developing implement coulters for volcanic red soils	Mr Miles Darveniza	mdarv@qld.chariot.net.au	\$27,000
GGP036	Total concept sugarcane planting system	Mr Daryl Morellini	daryl.m@itnq.com.au	\$19,000
GGP037	New innovative double row chopper system	Mr Chris Cannavan	cjcanavan@bigpond.com	\$29,000
GGP038	Improving billet planter efficiency	Mr Chris Shannon	candkshannon@bigpond.com.au	\$37,500
GGP039	Precision spot spraying system: it works in grains will it work in cane?	Mr Andrew Lashmar	alashmar@bigpond.com	\$9,500
GGP040	Build a prototype planter suitable for planting peanuts into uncultivated Cane Trash Blanket	Mr Don Halpin	Donella1@bigpond.com	\$12,000
HGP003	Modified rotary-pinch chopper system for improved harvesting efficiency	Mr Mike Smith	masmith@bundysugar.com.au	\$40,000
HGP004	Demonstrate the true value of harvesting best practice and provide the basis for the sharing of the additional revenue created by its adoption	Mr John Markley	j.markley@mkysugar.com.au	\$40,000
HGP008	Incentive price harvesting signals versus traditional payment system	Mr Anthony Girgenti	ant95@itnq.com.au	\$4,000
IBS002	Specialist grower groups enhancing BMP packaging & adoption in Innisfail & Babinda districts	Mr Bill Horsford	bhorsford@ibcps.com.au	\$70,963
ICB007	Isolation of sugarcane proteins involved in post-transcriptional gene silencing	Dr Robert Troedson	rtoedson@srdc.gov.au	\$0
MAF002	Evaluating alternative irrigation for a greener future	Mr Chris Hesp	sonyah@austarnet.com.au	\$61,819
NFS002	An integrated approach to nut grass control	Dr Bob Aitken	raitken@bses.org.au	\$33,000
NPSI01	National Program for Sustainable Irrigation	Dr Les Robertson	lrobertson@srdc.gov.au	\$100,000
NSC012	Single drum harvester chopper development	Dr Bruce Lamb	blamb@nswsugar.com.au	\$79,900
PCS002	Enhancing trap cropping techniques for greyback canegrub in rain-fed cane	Ms Jackie Richters	jrichters@csr.com.au	\$10,000
UNW003	Development of a constructed wetland for improving water quality in sugarcane drainage, and ensuring its community acceptance and industry adoption	Assoc Prof Mike Melville	m.melville@unsw.edu.au	\$6,775
UQ043	Harnessing soil biology to improve the productivity of the new sugarcane farming system	Dr Susanne Schmidt	susanne.schmidt@uq.edu.au	\$226,003
WAA003	Evaluation and Implementation of modified farming systems in the ORIA	Dr Joe Sherrard	jsherrard@agric.wa.gov.au	\$55,570

Regional Futures				
Transport, Milling and Marketing Systems				
CG009	Investigating opportunities for a grain and legume industry in a coastal sugarcane cropping regime	Ms Judy Plath	jplath@bses.org.au	\$3,045
MUL002	Evaluation of new clarification technologies for improved factory operation and overall sugar quality	Mr Glenn Pope	glenn@mulgravemill.com.au	\$40,000
QUT004	Commercial evaluation of alternative juice clarification processes	Dr William Doherty	w.doherty@qut.edu.au	\$10,800
QUT012	Improving the cost-effectiveness of mud filtration through modern technology	Dr Ross Broadfoot	r.broadfoot@qut.edu.au	\$14,963
QUT019	Improved train safety through improved locomotive braking performance	Dr Geoff Kent	g.kent@qut.edu.au	\$15,237
TSL001	Improved management of scale formation and scale removal in the Tully evaporator station	Mr John King	jking@tsl.com.au	\$75,000
TSL002	Pelletising mill mud and ash	Mr John King	jking@tsl.com.au	\$10,000
Emerging Technologies				
Genetics and Breeding Systems				
BSS267	Maximising whole-of-industry benefits from the Australian sugarcane improvement program through an optimal genetic evaluation system	Dr Xianming Wei	xwei@bses.org.au	\$52,000
BSS305	More crop per drop: developing water-efficient and drought tolerant sugarcane cultivars for irrigated and dryland farming	Dr Prakash Lakshmanan	plakshmanan@bses.org.au	\$213,000
BSS307	Development and implementation of NIR based predictive tools to rate sugarcane varieties against smut and Fiji leaf gall	Dr Michael O'Shea	moshea@bses.org.au	\$50,000
CRC006	Complete genome map of sugarcane	Dr Karen Aitken	Karen.Aitken@csiro.au	\$299,678
CRC008	Creating sustainable sugarcane production systems: reducing plant nitrogen demand	Dr Susanne Schmidt	susanne.schmidt@uq.edu.au	\$100,000
CRC009	High early sugar varieties: improved selection methods and marker-assisted breeding	Dr Barrie Fong Chong	bfongchong@bses.org.au	\$150,000
CRC010	Testing the sucrose accumulation model	Dr Christopher Grof	chris.grof@csiro.au	\$150,000
CRC011	Production of PHB/PHAs in sugarcane plants	Dr Stevens Brumbley	s.brumbley1@uq.edu.au	\$150,000
CSE014	Increased CCS, cane yield and water use efficiency by exploiting interactions between genetics and management	Dr Geoff Inman-Bamber	geoff.inman-bamber@csiro.au	\$261,788
QUT011	Factory trials with a novel cleaning formulation	Dr William Doherty	w.doherty@qut.edu.au	\$17,308
UQ040	Extending Sugar Booster technology into multiple sugarcane cultivars for optimal deployment by Australian industry	Dr Robert Birch	r.birch@botany.uq.edu.au	\$462,547

Emerging Technologies				
Farming, Harvesting, Transport, Milling and Marketing Systems				
CRC007	Bioactive natural products from sugarcane	Assoc Prof David Leach		\$100,000
CSE018	Precision Agriculture - An avenue for profitable innovation in the Australian sugar industry, or expensive technology we can do without?	Dr Rob Bramley	rob.bramley@csiro.au	\$9,832
GGP011	Develop a whole-of-crop load levelling arm	Mr Mark North	mbnorth@bigpond.com	\$2,000
GRF001	Automating harvester and haulout forward progression during harvest utilizing DGPS	Mr Bryan Granshaw	Bryangranshaw@bigpond.com	\$65,000
HGP005	Develop and assess adaptability of different row spacings for harvester fronts	Mr Joe Linton	jlinton@austranet.com.au	\$4,000
HGP009	Electronic logbook for harvest record keeping	Mr Brian Dore	bdore77@hotmail.com	\$1,500
JCU025	Thermoformable biodegradable composite material from sugar cane bagasse fibre	Prof Chris Berndt	Christopher.Berndt@jcu.edu.au	\$125,230
JCU029	Evaluation of membrane technology for clarification of sugar cane juice	Dr V Jegatheesan	jega.jegatheesan@jcu.edu.au	\$189,720
NCA009	Review, analysis and discussion of Precision Agriculture technologies	Mr Rod Davis	Rod.Davis@fsaconsulting.net	\$10,000
NCA010	Development of a prototype precision spot spray system using image analysis and plant identification technology	Mr Steven Rees	reesst@usq.edu.au	\$32,000
QUT005	Determination of factory benefits from full implementation of syrup clarification	Mr Rod Steindl	r.steindl@qut.edu.au	\$20,702
QUT015	Pilot scale development and evaluation of an improved process for furfural and fuel production from bagasse	Dr Phil Hobson	p.hobson@qut.edu.au	\$103,539
QUT016	High value products from furfural waste residue	Dr William Doherty	w.doherty@qut.edu.au	\$5,216
People Development				
Individual Capacity				
SRD022	Review of SRDC Communications	Mrs Claire Power	cpower@srcd.gov.au	\$26,300
AANR01	Australian Agriculture and Natural Resource Online	Mrs Claire Power	cpower@srcd.gov.au	\$3,950
BSS290	A review of key sugarcane crop improvement and pathology research in India to identify collaboration and germplasm exchange opportunities	Dr Nils Berding	nberding@bses.org.au	\$2,000
BSS298	Share farming options for the Australian sugar industry	Mr Peter McGuire	pmcguire@bses.org.au	\$0
BSS299	Improving governance, processes and R&D outcomes in the Australian sugar industry	Dr Peter Allsopp	pallsopp@bses.org.au	\$0
BSS308	Improving the economic analysis skills of NSW farmers using FEAT	Mr Peter McGuire	pmcguire@bses.org.au	\$5,000
BSS309	Attend 3rd International Conference of Quantitative Genetics at Zhejiang University China	Dr Xianming Wei	xwei@bses.org.au	\$4,250
BSS310	Application for Nathalie Piperidis to attend the Plant and Animal Genome (PAG) XVI conference in San Diego, CA, USA in 2008	Dr Nathalie Piperidis	npiperidis@bses.org.au	\$4,900

BSS312	Attend the Australian 5th Annual Control Traffic and Precision Ag Conference 2007	Mr Joe Muscat	jmuscat@bses.org.au	\$10,000
BSS313	Workshop to improve the efficiency of BSES-CSIRO selection programs through adoption of best-practice field and laboratory methods	Dr Mike Cox	mcox@bses.org.au	\$10,000
BSS316	Develop a variety exchange program with Mitr Phol Thailand	Dr George Piperidis	gpiperidis@bses.org.au	\$3,500
BSS317	Travel to the ISSCT Pathology and Molecular Biology workshop	Dr Kathy Braithwaite	kbraithwaite@bses.org.au	\$5,000
CG008	Targeted Planning for Profit: A grass roots program to build grower skills to manage change and implement integrated future planning	Ms Judy Plath	jplath@bses.org.au	\$35,114
CG019	Queensland sugarcane farmers - Their lives and stories through photographs	Ms Suzi Moore	suzi_moore@canegrowers.com.au	\$0
CIS002	Lessons from the US: exploring the US/ Canada soybean and alternative fuels industries to identify opportunities for the Australian sugar industry	Ms Judy Plath	jplath@bses.org.au	\$2,000
CKA002	A study tour to evaluate new dry cane cleaning technology and value adding concepts in Brazil	Mr Panikos Spyrou	kalcane@bigpond.com	\$10,000
CPI014	Application for Mark Jackson to attend the Plant Biology and Botany Conference in Chicago, USA	Mr Mark Jackson	mark.jackson@csiro.au	\$4,410
CSE021	Maximising the challenges and opportunities from climate change and ecosystem service payments for the Australian sugar industry	Dr Sarah Park	sarah.park@csiro.au	\$4,898
DPI018	FNQ grower farming systems tour of Southern Qld & Northern NSW	Mr Neil Sing	neil.sing@dpi.qld.gov.au	\$2,000
DPI019	Improving knowledge for statistical analysis of high resolution soil mapping data	Ms Angela Reid	angela.reid@dpi.qld.gov.au	\$1,108
IBS005	Group members attending 2007 Controlled Traffic Farming Conference	Mr Bill Horsford	bhorsford@ibcps.com.au	\$4,922
LDI001	Developing the leadership capacity of the Australian Sugar Industry	Ms Cheryl Phillips	cheryl.phillips@inet.net.au	\$30,057
MAP001	Papua New Guinea pest and disease study tour by MAPS people	Mr Allan Royal	aroyal@bigpond.com	\$9,422
MSA005	Value chain management learning at ISSCT 2007	Mr Geoff Fleming	g.fleming@mkysugar.com.au	\$0
NCT002	Travel to ISSCT Congress in Durban, and visit the Noodsberg mill area to discuss their successful EMS system	Mr Robert Quirk	rgquirk@bigpond.com	\$0
QUT003	An integrated pest management strategy for climbing rat in the far-north Queensland sugarcane production system	Dr Susan Fuller	s.fuller@qut.edu.au	\$38,848
QUT018	Travel to the 2007 ISSCT congress and mill visits to investigate alternative technologies in sugar and sugar co-products manufacture	Mr Darryn Rackemann	d.rackemann@qut.edu.au	\$0
QUT025	Inspect the white sugar mill installed at Felixton Mill, South Africa	Mr Rod Steindl	r.steindl@qut.edu.au	\$3,240

QUT026	Biofuels and power from high efficiency thermal processes; R&D capacity and network building	Dr Phil Hobson	p.hobson@qut.edu.au	\$5,000
RDA005	Fostering and rewarding an innovation culture in the Australian sugar industry	Mrs Claire Power	cpower@srcd.gov.au	\$28,697
REL001	Building grower capacity in steps	Dr Kate Roberts	kroberts@robertsevaluation.com.au	\$12,900
SCU002	Participation in the Society for Medicinal Plant Research Conference, 2–6 September, 2007	Mrs Dionne Payn	dpayn@scu.edu.au	\$3,100
SRD013	Review of SRDC investment in Travel and Learning Opportunity Projects (TLOP)	Mrs Ingrid Roth	iroth@hassall.com.au	\$29,274
SRD019	Building the presentation and media skills of SRDC Scholarship students	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$15,828
SRD024	Participation in CVCB Fasttrack workshops	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$3,000
SRI130	Technology transfer - more skilled factory staff via troubleshooting/help manuals and access to SRI modelling software	Mr Rod Steindl	r.steindl@qut.edu.au	\$36,664
STU049	P Wulf - Self-regulatory codes of practice & their effectiveness in achieving best environmental management practices within NQ primary industries	Dr Mal Wegener	malcolm.wegener@uq.edu.au	\$2,500
STU050	Mira Durr - Microbiology of acid sulfate soils in agricultural environments	Prof Ian White	ian.white@anu.edu.au	\$6,500
STU052	Kylie Anderson - Invasion potential of Eumetopina flavipes, vector of Ramu Stunt Disease of Sugarcane	Dr Bradley Congdon	brad.congdon@jcu.edu.au	\$18,372
STU053	Su Yin Tan - Studies on bagasse fractionation using ionic liquids	Prof Doug MacFarlane	douglas.macfarlane@sci.monash.edu.au	\$40,000
STU055	Karen Benn - The motivators and barriers to the adoption of more sustainable farming practices	Dr Janice Elder	Janice.Elder@jcu.edu.au	\$20,000
STU056	Kenji Osabe - Development and application of a mature stem specific promoter in sugarcane	Dr Robert Birch	r.birch@botany.uq.edu.au	\$32,000
STU057	Tom Rainey - Improved bagasse fibre properties for the manufacture of paper, board and composite materials	Dr William Doherty	w.doherty@qut.edu.au	\$32,000
STU059	Anna Satje - Improving the cation retention capacity of cane-growing soils using high activity clays	Dr Paul Nelson	paul.nelson@jcu.edu.au	\$19,255
STU060	Felicity Atkin - Estimates of breeding value of sugarcane clones and their impact on efficient parent management and cross pollination	Dr Joanne Stringer	jstringer@bses.org.au	\$32,000
STU061	Palmina Bonaventura - Communicate to advance and innovate	Dr Peter Allsopp	pallsopp@bses.org.au	\$41,470
STU062	Henry Thomas - Making database application development as straight forward as building spreadsheets	Dr John Leis	leis@usq.edu.au	\$32,000
STU063	Ian O'Hara - Pretreatment of sugarcane bagasse for enzymatic hydrolysis and fermentation	Dr Les Edye	l.edye@qut.edu.au	\$10,667

STU064	Daniel Zamykal - Intelligent data analysis methods from effective integration of Precision Agriculture within the Australian Sugar Industry	Dr Yvette Everingham	Yvette.everingham@jcu.edu.au	\$10,667
STU065	Milovan Bokan - Abiotic stress tolerant sugarcane: Drought-proofing sugarcane with cell-death protection genes	Dr Harjeet Khanna	h.khanna@qut.edu.au	\$13,333
WS011	Building capacity for continuous improvement and innovation in the Isis and Maryborough Sugar Regions	Ms Janice Timms	janice.timms@dpi.qld.gov.au	\$0
People Development				
Social Capacity				
APA001	Improving the knowledge of the Australian sugar technologists, managers and canegrowers in the production of bagasse pulp and paper products	Mr Dennis Shore	djshore@bigpond.net.au	\$0
BCA002	Performance evaluation of SRDC R&D investments	Dr Robert Troedson	rtroedson@srdc.gov.au	\$56,050
BSS287	Enhancing grower groups in the Australian sugar industry	Dr Peter Allsopp	pallsopp@bses.org.au	\$40,366
BSS300	Feasibility of acoustic detection of canegrubs for better management decisions	Dr Peter Samson	psamson@bses.org.au	\$0
BSS301	Farmers sharing their farming system story with the world and learning from other farmers in South Africa	Mr Peter McGuire	pmcguire@bses.org.au	\$2,000
BSS314	Developing an integrated cropping-systems RD&E program for the sugar industry	Dr Peter Allsopp	pallsopp@bses.org.au	\$8,000
BSS315	Conduct an R,D& E symposium in the Burdekin	Mr Evan Shannon	eshannon@bses.org.au	\$2,000
CG020	Workshop to promote on-farm water quality testing by growers	Dr Tim Wrigley	tim_wrigley@canegrowers.com.au	\$5,000
CGH001	Where are the women?	Ms Sherry Kaurila	sherrykaurila@bigpond.com	\$17,981
CMC001	CANEGROWERS' strategy for women and teams	Ms Cathy McGowan	cathy@cathymcgowan.com	\$24,401
CMY001	Increasing WHS awareness and knowledge in the Queensland cane growing industry	Mr Jim Kirchner	jim_kirchner@mky.canegrowers.com.au	\$0
CMY002	Grower Innovation Virtual Expo (GIVE) Day 2008 - Mackay	Mr Chris Aylward		\$10,000
CQU005	Farm size and production on Queensland sugarcane farms	Dr Jim McAllister	jim_mcallister@byterocky.net	\$3,000
CSE009	Moving from case studies to whole of industry: Implementing methods for wider industry adoption	Dr Yvette Everingham	Yvette.everingham@jcu.edu.au	\$51,706
CSE016	Sugar communities and resilience to change: Opportunities for enhancing women's participation in sustainability initiatives	Dr Emma Jakku	emma.jakku@csiro.au	\$141,769
CSE017	SREMS (Sugarcane Research Experiment Management System)	Dr Sarah Park	sarah.park@csiro.au	\$0
CSR030	Herbert cultural imprint analysis - A pathway to greater understanding and co-operation in decision making	Dr Andrew Wood	awood@csr.com.au	\$68,474

CSR041	Optimisation of the harvest/transport interface for the Plane Creek Mill Area	Mr Brett Jurd	bjurd@csr.com.au	\$10,000
CSR042	What can we learn from the Burdekin CPI?	Mr Robin Juffs	RJuffs@csr.com.au	\$5,000
CTB001	Building the capacity of Tableland cane growers to prepare successful project submissions	Ms Bronwyn Francis	bronwyn_francis@canegrowers.com.au	\$1,700
FMT001	Farm Business Management Groups: Learning from Victorian, New South Wales and South Australian agricultural development and extension experiences	Mr Andrew Lashmar	alashmar@bigpond.com	\$4,520
GGP001	Group Innovation Projects liaison and support	Dr Les Robertson	lrobertson@srcd.gov.au	\$81,985
GGP014	Better financial and operational decision making in grower owned farming/ harvesting businesses	Mr Ian Haigh	idhaigh@bigpond.com	\$28,570
JCU028	Short scale movement of the island cane planthopper, Eumetopina flavipes, the vector of Ramu Stunt Disease of sugarcane	Ms Kylie Anderson	Kylie.Anderson1@jcu.edu.au	-\$1,155
LDI002	Building the capacity of Generation Next stakeholders to position them to make a positive contribution to the Sugar Industry's future	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$35,407
MAP002	Mackay alignment of grower services (MAGS)	Mr Burn Ashburner	bashburner@maps.org.au	\$41,520
MSF004	Maryborough Sugar industry participating in the 5th Controlled Traffic Farming & Precision Agriculture Conference 2007	Dr Yolande Lambert	yolandelambert@marysug.com.au	\$0
MSF005	Improving productivity and profitability on dry-land cane farms in Maryborough	Mr Andrew Dougall	andrew.dougall@dpi.qld.gov.au	\$5,000
NFS001	Increasing the knowledge of raised bed farming by the NSW farming systems group	Mr Alan Munro	alan@rmunroandsons.com.au	\$1,800
NSC013	NSW farmers and mill technologists learning and sharing at the 2007 ASSCT conference	Mr Rick Beattie	rbeattie@nswsugar.com.au	\$1,400
SRD006	Building capacity of Grower Group project participants	Dr Les Robertson	lrobertson@srcd.gov.au	\$16,223
SRD012	Precision Agriculture workshop	Dr Les Robertson	lrobertson@srcd.gov.au	\$20,066
SRD020	Enhanced availability of project outcomes and resources	Mrs Claire Power	cpower@srcd.gov.au	\$706
SRD021	Water Management Workshop 2007	Dr Les Robertson	lrobertson@srcd.gov.au	\$3,459
SRD023	Review of the SRDC Grower Group Innovation Projects (GGIP)	Dr Jeff Coutts	jeff@couttsjr.com.au	\$70,000
SRD025	Supporting regional Generation Next initiatives	Dr Diana Maldonado	dmaldonado@srcd.gov.au	\$3,846
SRI140	Documenting changes in the performance of the Australian sugar industry milling sector 2003–08	Dr Geoff Kent	g.kent@qut.edu.au	\$11,261

Appendix D

Final Reports Approved 2007–08

Project	Title	Lead Organisation
Regional Futures		
AGX001	Harvester best practice on-board expert system and monitoring	Agtrix PTY LTD
BSS257	GrubPlan 2: Developing improved risk assessment and decision-support systems for managing greyback canegrub	BSES Limited
BSS264	Adoption of an optimal season length for increased industry profitability	BSES Limited
BSS267	Maximising whole-of-industry benefits from the Australian sugarcane improvement program through an optimal genetic evaluation system	BSES Limited
BSS270	Regional adoption of alternative harvester configurations for sustainable harvesting efficiency	BSES Limited
CG009	Investigating opportunities for a grain and legume industry in a coastal sugarcane cropping regime	CANEGROWERS Isis
CVA002	Managing Climate Variability Program	Land and Water Australia
GGP004	Implementation of improved sugarcane farming systems in the Clare area of the Burdekin District	Mulgrave Integrated Group
GGP007	Controlled traffic farming systems for the North Coast Grower Group	Mackay Area Productivity Services
GGP022	Optimising Benefits of GPS Integration into Controlled Traffic Farming (CTF) System	Deguara Harvesting
GTG002	Implementation of the communication plan for the Sugarcane Gene Technology Group	Queensland Sugar Limited
HGP003	Modified rotary-pinch chopper system for improved harvesting efficiency	Bundaberg Sugar
HGP004	Demonstrate the true value of harvesting best practice and provide the basis for the sharing of the additional revenue created by its adoption	Mackay Sugar Cooperative Association Ltd
HGP008	Incentive price harvesting signals versus traditional payment system	Ripple Creek Harvesting
IBS002	Specialist grower groups enhancing BMP packaging & adoption in Innisfail & Babinda districts	Innisfail Babinda Cane Productivity Services Ltd
ICB007	Isolation of sugarcane proteins involved in post-transcriptional gene silencing	Texas Agricultural Experiment Station
LWA002	National Climate Change Research Strategy for Primary Industries	Land and Water Australia
MSF002	Implementing integrated harvesting-transport-milling logistics through adoption of optimised road transport scheduling	Maryborough Sugar Factory
QUT012	Improving the cost-effectiveness of mud filtration through modern technology	Queensland University of Technology

Emerging Technologies		
CSE018	Precision Agriculture - An avenue for profitable innovation in the Australian sugar industry, or expensive technology we can do without?	CSIRO Sustainable Ecosystems
GGP008	Overcoming barriers to controlled traffic adoption - Managing traffic during conversion to controlled traffic farming systems	Plane Creek Sustainable Farmers Inc
GGP011	Develop a whole-of-crop load levelling arm	Condong Cane Farmers R&D
HGP005	Develop and assess adaptability of different row spacings for harvester fronts	Linton & Walsh
HGP009	Electronic logbook for harvest record keeping	Murray Harvesting Pty Ltd
QUT004	Commercial evaluation of alternative juice clarification processes	Queensland University of Technology
QUT005	Determination of factory benefits from full implementation of syrup clarification	Queensland University of Technology
QUT011	Factory trials with a novel cleaning formulation	Queensland University of Technology
People Development		
APA001	Improving the knowledge of the Australian sugar technologists, managers and canegrowers in the production of bagasse pulp and paper products	Aust Pulp and Paper Industry Technical Association
AU002	Participate in the international conference on lepidopterous stemborers	The University of Adelaide
BSS287	Enhancing grower groups in the Australian sugar industry	BSES Limited
BSS290	A review of key sugarcane crop improvement and pathology research in India to identify collaboration and germplasm exchange opportunities	BSES Limited
BSS298	Share farming options for the Australian sugar industry	BSES Limited
BSS299	Improving governance, processes and R&D outcomes in the Australian sugar industry	BSES Limited
BSS300	Feasibility of acoustic detection of canegrubs for better management decisions	BSES Limited
BSS301	Farmers sharing their farming system story with the world and learning from other farmers in South Africa	BSES Limited
BSS309	Attend 3rd International Conference of Quantitative Genetics at Zhanjiang University China	BSES Limited
BSS310	Application for Nathalie Piperidis to attend the Plant and Animal Genome (PAG) XVI conference in San Diego, CA, USA in 2008	BSES Limited
BSS312	Attend the Australian 5th Annual Control Traffic and Precision Ag Conference 2007	BSES Limited
BSS313	Workshop to improve the efficiency of BSES-CSIRO selection programs through adoption of best-practice field and laboratory methods	BSES Limited
CG008	Targeted Planning for Profit: A grass roots program to build grower skills to manage change and implement integrated future planning	CANEGROWERS Isis
CGH001	Where are the women?	CANEGROWERS Herbert River
CIS002	Lessons from the US: exploring the US/Canada soybean and alternative fuels industries to identify opportunities for the Australian sugar industry	CANEGROWERS Isis
CKA002	A study tour to evaluate New Dry Cane Cleaning Technology and Value Adding Concepts in Brazil	Kalamia Cane Growers Organisation Ltd

CMC001	CANEGROWERS' strategy for women and teams	Catherine McGowan Consulting
CMY002	Grower Innovation Virtual Expo (GIVE) Day 2008 - Mackay	CANEGROWERS Mackay
CPI014	Application for Mark Jackson to Attend the Plant Biology and Botany Conference in Chicago, USA	CSIRO Plant Industry
CQU005	Farm size and production on Queensland sugarcane farms	Central Queensland University
CSE009	Moving from case studies to whole of industry: Implementing methods for wider industry adoption	CSIRO Sustainable Ecosystems
CSE021	Maximising the challenges and opportunities from climate change and ecosystem service payments for the Australian sugar industry	CSIRO Sustainable Ecosystems
CSR030	Herbert cultural imprint analysis - A pathway to greater understanding and co-operation in decision making	CSR Sugar
CSR041	Optimisation of the harvest/transport interface for the Plane Creek Mill Area	CSR Sugar
CTB001	Building the capacity of Tableland cane growers to prepare successful project submissions	CANEGROWERS Tableland
IBS005	Group Members attending 2007 Controlled Traffic Farming Conference	Innisfail Babinda Cane Productivity Services Ltd
JCU028	Short scale movement of the island cane planthopper, <i>Eumetopina flavipes</i> , the vector of Ramu Stunt Disease of Sugarcane	James Cook University
MAP001	Papua New Guinea pest and disease study tour by MAPS people	Mackay Area Productivity Services
MSA005	Value chain management learning at ISSCT 2007	Mackay Sugar Cooperative Association Ltd
MSF004	Maryborough Sugar industry participating in the 5th Controlled Traffic Farming & Precision Agriculture Conference 2007	Maryborough Sugar Factory
NCT002	Travel to ISSCT Congress in Durban, and visit the Noodsberg mill area to discuss their successful EMS system	New South Wales Canegrowers Council
NFS001	Increasing the knowledge of raised bed farming by the NSW farming systems group	NSW Farming Systems Group
NSC013	NSW farmers and mill technologists learning and sharing at the 2007 ASSCT conference	New South Wales Sugar Milling Co-operative Ltd
QUT018	Travel to the 2007 ISSCT congress and mill visits to investigate alternative technologies in sugar and sugar co-products manufacture	Queensland University of Technology
QUT026	Biofuels and power from high efficiency thermal processes; R&D capacity and network building	Queensland University of Technology
REL001	Building grower capacity in steps	Roberts Evaluation Pty Ltd
SCU002	Participation in the Society for Medicinal Plant Research Conference, 2-6 September, 2007	Southern Cross University
SRD013	Review of SRDC investment in Travel and Learning Opportunity Projects (TLOP)	Hassall & Associates Pty Ltd
SRD023	Review of the SRDC Grower Group Innovation Projects (GGIP)	Coutts J & R Pty Ltd
SRI140	Documenting changes in the performance of the Australian sugar industry milling sector 2003-2008	Sugar Research Institute
WS011	Building capacity for continuous improvement and innovation in the Isis and Maryborough Sugar Regions	Queensland Department of Primary Industries & Fisheries

Appendix E

Publications

Published Papers (includes Proceedings of the Australian Sugar Cane Technologists 2008 Papers)

Attard SJ, Thorburn PJ, Biggs J, Kemei J, Anderson T. (2008) Farming practices to meet the water quality challenge in the Burdekin region. *Proceedings of the Australian Society of Sugar Cane Technologists* 30: 353

Barnes MG, Loughran JG, Lamb BW. (2008). Laboratory experiments on billeting sugarcane, *Proceedings of the Australian Society of Sugar Cane Technologists* 30: 457

Biggs IM, Webster AJ, Thorburn PJ, Staunton S, and Biggs JS. (2008). Monitoring N stress in sugarcane: Approaches at the mill using total N. *Proceedings Australian Society Sugar Cane Technologists*, 30: 372–373.

Carr AP, Carr DR, Carr IE, Wood AW, Poggio M. (2008) Implementing sustainable farming practices in the Herbert: the Oakleigh Farming Company experience. *Proceedings Australian Society Sugar Cane Technologists*, 30: 25

Croft, BJ, Berding, N, Cox, MC and Bhuiyan S (2008) Breeding smut-resistant sugarcane varieties in Australia: Progress and future directions. *Proceedings of the Australian Society of Sugar Cane Technologists* 30: 125

Croft, BJ, Magarey, RC, Allsopp, PG, Cox, MC, Willcox, TG, Milford, BJ and Wallis, ES (2008) Sugarcane smut in Queensland: Arrival and emergency response. *Australasian Plant Pathology* 37: 26–34.

Croft, BJ, Magarey, RC, Quinn, B, Royal, A and Kerkwyk R (2008) Sugarcane smut in Queensland. *Proceedings Australian Society Sugar Cane Technologists*, 30: 52

Di Bella L, Stringer JK, Wood AW, Royle AR, Holzberger GP. (2008) What impact does time of harvest have on sugarcane crops in the Herbert River District? *Proceedings of the Australian Society of Sugar Cane Technologists* 30: 337

Doherty WOS, Rackemann DW. (2008) Some aspects of calcium phosphate chemistry in sugarcane clarification. *Proceedings of the Australian Society of Sugar Cane Technologists* 30: 526

Everingham Y, Baillie C, Inman-Bamber G, Baillie J.(2008). Forecasting water allocations for Bundaberg sugarcane farmers. *Climate Research* 36, 231–239

Fengduo Hu, Jackson P, Basford K. (2008) Developing optimal selection systems in sugarcane breeding programs. *Proceedings of the Australian Society of Sugar Cane Technologists* 30: 162

Green, R., Macdonald, B.C.T., Melville, M.D., Waite, T.D. (2006). Hydrology of episodic drainage waters discharged from an acid sulfate soil affected catchment. *J. Hydrology*. 325: 356–375.

Green, R., Waite, T.D., Melville, M.D. (2007). Treatment of acid sulfate soil drainage by direct application of alkaline reagents. *Water, Air, and Soil Pollution*. 17: 59–68.

Green, R., Waite, T.D., Melville, M.D., Macdonald, B.C.T. (2006). Characteristics of the acidity in acid sulfate soil drainage waters, McLeods Creek, northeastern New South Wales, Australia. *Environmental Chemistry*. 3: 225–232.

Green, R., Waite, T.D., Melville, M.D., Macdonald, B.C.T. (2008). Effectiveness of an open limestone channel in treating acid sulfate soil drainage. *Water, Air, and Soil Pollution*. 191: 293–304.

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SRDC Technical Publications

SRDC Technical Report 2/2007

Climate Change and the Australian sugarcane industry: Impacts, adaptation and R&D opportunities.

SRDC Technical Report 3/2007

Precision agriculture options for the Australian sugarcane industry

SRDC Statutory Publications

SRDC Research and Development Plan 2007–2012

SRDC Annual Report 2006–07

SRDC Annual Operational Plan 2007–08

SRDC General Publications

SRDC issues a range of publications electronically, either through the SRDC website or directly to a subscribers list.

Publications include:

- SRDC Update – six issues a year, SRDC Update appears in various industry publications
- eNews – a monthly update sent via a subscription list
- Media releases – issued regularly
- Travel and Learning Opportunities – case studies
- Investing in innovation.

Appendix F

Freedom of Information Act Statement

Organisation

The role, structure and functions of SRDC, including details of the Directors and staff, are outlined in Section 5 of this Annual Report (Report of Corporate Operations).

The Corporation is accountable to the Australian Government through the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, and to the three Representative Bodies prescribed through SRDC's governing legislation, the PIERD Act:

- Australian Cane Growers Council
- Australian Cane Farmers Association
- Australian Sugar Milling Council Proprietary Limited.

Categories of documents

The following documents are available on request from SRDC's Brisbane office and/or may be downloaded from the SRDC website www.srdc.gov.au:

Annual Operational Plan, Annual Report, Research and Development Plan, Technical Reports, Newsletters (SRDC Update).

The following documents and files may be downloaded from the SRDC website:

Proposal Forms and Application Kits for Research Projects, Scholarships, Grower Group Innovation and Travel and Learning Opportunity Projects.

Other files and documents are not customarily made available and are subject to assessment of access for reasons including commercial confidentiality or personal privacy.

FOI statistics 2007–08

FOI requests received	Nil
Internal review received	Nil
Fees/charges levied	Nil
Fees/charges collected	Nil
AAT appeals	Nil
AAT decisions	Nil

FOI procedures

Enquiries about access to documents or other matters relating to FOI should be directed to the FOI Contact Officer between 9.00am and 5.00pm, Monday to Friday.

The FOI contact officer is:

The Executive Director
Sugar Research and
Development Corporation

Level 16
141 Queen Street
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Telephone (07) 3210 0495
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Email srdc@srdc.gov.au

Appendix G

Abbreviations

ACFA	Australian Cane Farmers' Association	IP	Intellectual Property
ACGC	Australian Cane Growers' Council	IPM	Integrated Pest Management
ASSCT	Australian Society of Sugarcane Technologists	ISSCT	International Society of Sugar Cane Technologists
DAFF	Australian Government Department of Agriculture Fisheries and Forestry	JCU	James Cook University
DAFWA	Department of Agriculture and Food, Western Australia	LWA	Land and Water Australia
AOP	Annual Operational Plan	MCV(P)	Managing Climate Variability (Program)
ASMC	Australian Sugar Milling Council Proprietary Limited	NSW	New South Wales
ASSCT	Australian Society of Sugar Cane Technologists	NSWSMC	New South Wales Sugar Milling Cooperative
BPMS	Business Process Management System	OH&S	Occupational Health and Safety
BSES	BSES Limited	ORIA	Ord River Irrigation Area
CAC Act	Commonwealth Authorities and Companies Act 1997	PBS	Portfolio Budget Statement
CCS	Commercial Cane Sugar	PIERD Act	Primary Industries and Energy Research and Development Act 1989
CPPB	Cane Protection and Productivity Board	QDPI&F	Queensland Department of Primary Industries and Fisheries
CP2002	Cross Program Activity CP2002	QDNRM	Queensland Department of Natural Resources and Mines
CRC	Cooperative Research Centre	QSL	Queensland Sugar Limited
CRCSIIB	Cooperative Research Centre for Sugar Industry Innovation through Innovation	QUT	Queensland University of Technology
CSIRO	Commonwealth Scientific and Industrial Research Organisation	R&D	Research and Development
FEAT	Farm Economics Assessment Tool	RDC	Research and Development Corporations
FMS	Farm Management Systems	RIRDC	Rural Industries Research and Development Corporation
GGIP	Grower Group Innovation Project	SRDC	Sugar Research and Development Corporation
GIS	Geographical Information System	SRI(QUT)	Sugar Research Institute at Queensland University of Technology
GPS	Global Positioning Service	SYDJV	Sugar Yield Decline Joint Venture
GVP	Gross Value of Production (of sugarcane)	TLOP	Travel and Learning Opportunity Project
HGIP	Harvester Group Innovation Project	UQ	University of Queensland
IGG	Industry Guidance Group	WIS	Women in Sugar

Appendix H

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Appendix I

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