Australian Government

Sugar Research and Development Corporation

Sugar Research and Development Corporation

Annual Report 2006–2007

Letter of Transmission

28 September 2007

The Hon. Sussan Ley
Parliamentary Secretary to the Minister for Agriculture,
Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Ms Ley,

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 2006–07. The activities of the Corporation are reported against the objectives, strategies, outputs and outcomes of the SRDC Research and Development Plan (R&D Plan) 2003–2008 and are consistent with the 2006–07 Annual Operational Plan, Portfolio Budget Statement and Statement of Intent.

The report of operations included in the Annual Report has been made in accordance with a resolution of the Directors of SRDC on 24 August 2007. 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 2006–07 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,

RG Granger
Chair
Sugar Research and Development Corporation

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Contents

Highlights

Successes

SRDC is working with researchers and industry to improve understanding and adoption of new and improved farming practices.

- There is rapid uptake of the new farming system across the sugar industry, and those who have applied the principles are benefiting from the improvements in productivity, sustainability and environmental issues — the area planted to sugarcane using controlled traffic in 2007 was 25 500 ha (9200 ha in 2003); minimum tillage planting, including zonal tillage was implemented on 18 300 ha in 2007 (6429 ha in 2003); and legume break crops were grown on 8300 ha in 2007 (4300 ha in 2003). (SRDC Project Code: **BSS286**)

- Sustainability and productivity of sugarcane cropping is enhanced through the inclusion of grain legumes such as soybean in the crop rotation. Provision of new varieties to industry provides a way of underpinning sustainable farming systems. Researchers from CSIRO's Plant Industry are working on an SRDC-funded project to release new varieties of soybean. Several SRDC-funded Grower Group Innovation Projects are working on improved ways of including legumes in sugarcane farming systems. (SRDC Project Code: **CPI009**)

- A Queensland Department of Primary Industries and Fisheries (QDPI&F) program, supported by SRDC, is helping growers to base decisions on sound economic information rather than their intuition. The Farm Economic Analysis Tool (FEAT) is simple to use, and is in demand right across industry. (SRDC Project Code: **DPI015**)

- Since 2004, industry organisations have collaborated to develop a farm management system (FMS) for the sugarcane industry. The FMS suite of projects, funded by the National Heritage Trust, was completed in 2007. A survey of 170 cane

growers in five cane producing regions showed a high level of awareness of the term FMS and a high level of understanding what FMS is, with the response moving from 'it's a farm plan' to 'it incorporates planning for profitability and sustainability'. Seventy-eight percent of growers surveyed believed that sugarcane growers need to have a farm management system in place. (SRDC Project Code: **FMS001-005**)

SRDC has supported projects that are contributing to a reduction in losses and an improvement in efficiency across the harvesting and transport sectors.

- The New South Wales sugarcane industry has taken a huge bite out of their input costs, reducing the costs of their cane supply operations by a whopping 32 per cent in just four years thanks to a project which has developed a harvest management system. (SRDC Project Code: **NSC006**)

- Harvester operators are working towards making incentive-based systems for harvest payment attractive options for growers. These systems are rewarding growers for good farm layout and are improving the effectiveness of the harvesting operation. (SRDC Project Codes: **HGP008** and **HGP006**)

SRDC's investments have helped to provide industry with the resources it needs to develop and implement better systems to manage variety selection and pests and diseases.

- Information gathered in smut resistance screening trials conducted in Indonesia as part of SRDC-funded and BSES Limited-led projects is being used to help growers manage the outbreak of the disease. (SRDC Project Codes: **BSS256** and **BSS265**)

- Strengthening the reliability of the cane supply and improving the efficiency of breeding programs are two of the results expected from a BSES-CSIRO joint venture project. The research will have an immediate impact on variety release decisions and a longer-term impact on all stages of the breeding program. Already the researchers have implemented a new framework which is improving breeders' ability to estimate breeding values for potential parental clones. (SRDC Project Code: **BSS267**)

SRDC has invested in projects that are helping to improve efficiency and safety in sugar mills

- Factory trials into novel cleaning formulations should save industry time and money in the milling process. For mill workers, the new cleaning formulations also present fewer hazards. (SRDC Project Code: **QUT011**)
- Researchers and millers are working together to determine the factory benefits from full implementation of syrup clarification. This project will give mills interested in identifying niche markets an opportunity to produce a crystal product that is outside the range of sugar grades produced to be marketed overseas as raw sugars. (SRDC Project Code: **QUT005**)

SRDC has helped sugarcane industry people improve their health and wellbeing.

- The Sustainable Farm Families program found that, in the second year of the program, 80 per cent of Ayr participants had changed their diets to healthier choices and their blood-sugar levels had dropped. As one grower put it — without your health you've got nothing. (SRDC Project Code: **OHS002**)

SRDC is investing in the future research capital of the industry.

- An external review conducted in 2006–07 has shown that the sugar industry has benefited through SRDC's scholarship program with 60 people undertaking study in a range of fields including: pests and diseases; farming systems; environmental and natural resource management; harvesting and transport; and social science. (SRDC Project Code: **SRD014**)

Responding to challenges

Understanding and responding to climate change and climate variability

- In addition to being a partner in the RDC Joint Venture Managing Climate Variability, SRDC invested in research designed to help the Australian sugarcane industry identify and respond to the possible impacts of climate change. The project, conducted by researchers from CSIRO and QPDI&F, will enable industry to respond and better adapt to climate change in a timely and sustainable manner and to capitalise on potential growth opportunities. (SRDC Project Code: **CSE019**)

Tapping into emerging technologies to benefit the industry

- In November 2006, SRDC launched a technical report *Analysis of Bagasse and Trash Utilisation Options*, designed to assist decision making by the industry to derive additional revenue from bagasse and trash. The report increased the awareness of the benefits and risks associated with value adding to bagasse and trash, by improving the understanding of financial and technical barriers associated with bagasse and trash utilisation and by identifying the environmental and social benefits from initiating a large scale renewable products industry.

Developing the industry's people

- Thirty participants in the Impact on Sugar program are developing the skills they need to be the industry leaders of tomorrow. This program has helped members of the Australian sugarcane industry learn skills including networking, decision making and representation. Participants have all undertaken projects with an industry sustainability or profitability focus as part of the Impact on Sugar program. (SRDC Project Code: **LDI001**)

Maximising the R&D effort through collaboration

- Throughout 2006–07 SRDC sought to maximise the R&D efforts of the Australian sugarcane industry by championing collaboration. As well as collaborating with research and industry organisations to deliver R&D outcomes, SRDC has partnered with other rural research and development corporations on joint ventures including the Cooperative Venture for Capacity Building for Innovation in Rural Industries, the Farm Health and Safety Joint Research Venture, the Natural Resource Management Collaborative Venture and the Managing Climate Variability Programme.

Overview of SRDC

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, on which SRDC is based, are outlined below.

Features of the R&D Corporations model

- The rural R&D Corporations (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 will optimally 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 2006–07 the levy remained at $0.14 per tonne of sugarcane harvested, divided equally between growers and millers.

Industry and R&D environment

The Australian sugarcane industry produces raw and refined sugar from sugarcane. Income is also derived from by-products including ethanol and molasses, and from generation of energy. While, on average, Australia produces only three to four per cent of the world sugar supply, it exports approximately eight to ten per cent of the sugar traded worldwide. In recent years, Australian sugar production has been between four and five million tonnes per annum, depending on seasonal conditions. In contrast to the increase in international sugar prices in 2005–06, 2006–07 was marked by a particularly volatile and challenging sugar price environment. Sugar yield declined in 2006–07, due mainly to a combination of damage from Cyclone Larry and wet conditions early in the harvest period. Figures 2.1 to 2.4 highlight relevant industry statistics.

Total funds available for sugar industry R&D in 2006–07 were estimated in October 2006 to be $49.9 million, of which 45 per cent was contributed by the industry. This total consisted of $12 million provided by SRDC, $25.5 million from R&D providers (including CSIRO, universities, BSES Ltd and productivity services companies) and $12.4 million from the Cooperative Research Centre for Sugar Industry Innovation through Biotechnology. These levels of funding are similar to those in recent years.

Figure 2.1 Area of cane harvested (since 1996)

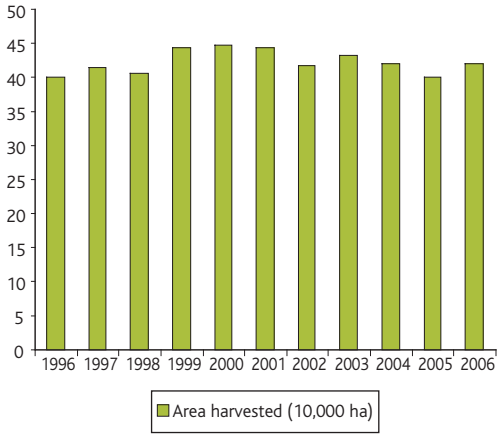


Figure 2.2 Cane produced (since 1996)

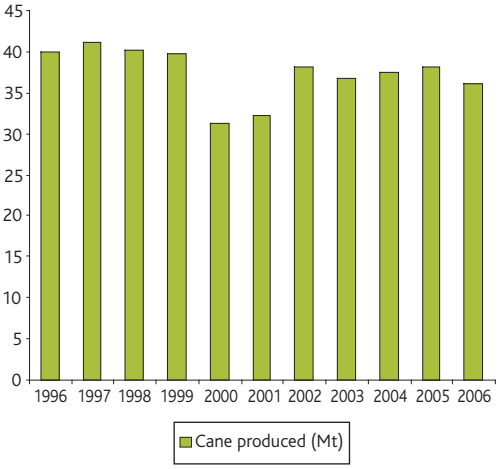


Figure 2.3 Gross value of product (since 1996)

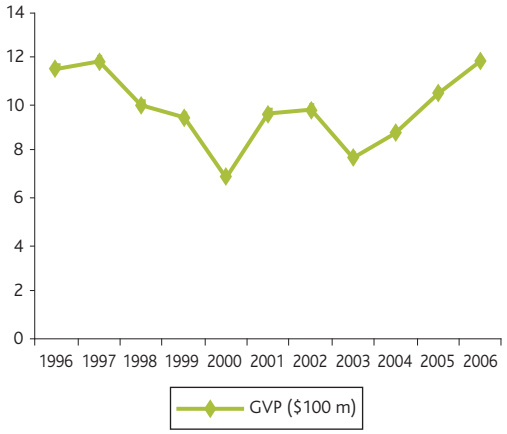
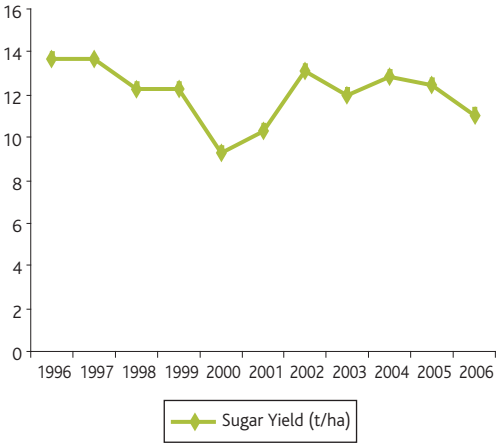


Figure 2.4 Sugar yield (since 1996)



Project investments

The 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 2006–07, SRDC continued to place considerable energy into ensuring that the results of research and development projects deliver benefits to the Australian sugarcane industry. An emphasis on partnerships between industry sectors and within and between regions is helping to ensure that results deliver benefit to the industry.

SRDC invested in four types of projects in 2006–07:

- Research Projects are SRDC's core investment in R&D and comprise around 90 per cent of project funding
- Scholarship Projects support postgraduate study
- Travel and Learning Opportunity Projects (TLOP) are small projects which support specific learning opportunities for individuals or groups
- Grower Group Innovation Projects (GGIP) are conducted by grower groups

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

Tables 2.1 and 2.2 provide a snapshot of project and reporting statistics for the periods 2005–06 and 2006–07.

Figure 2.5 Proportion of SRDC project types by funding (as as 30 June 2007)

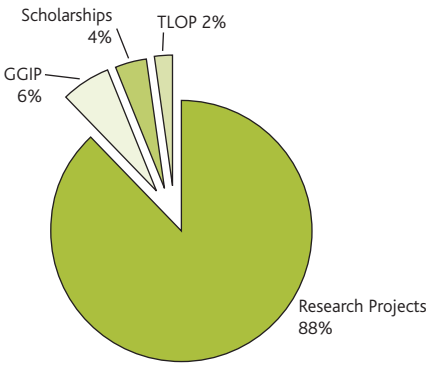


Table 2.1 SRDC Project Statistics (as at 30 June each year)

	2006–07	2005–06
Research Projects	87	105
Scholarships	12	12
Grower/Harvester Group Innovation Projects	29	18
Travel and Learning Opportunity Projects	58	57

Table 2.2 Project reports received 2006–07 and 2005–06

	2006–07	2005–06
Milestone reports	414	352
Final reports	57	78

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

The target allocations for each Program Area were identified in the SRDC R&D Plan 2003–2008 and Annual Operational Plan 2006–07 (Table 2.3). The distribution of project funding across the four programs is illustrated in Figure 2.6.

Allocations across Programs B (Farming Systems) and C (Possessing and Distribution Systems) are within the targeted range. The allocations in Programs A (Value Chain Integration) and D (Industry Capacity) were marginally outside the targeted range.

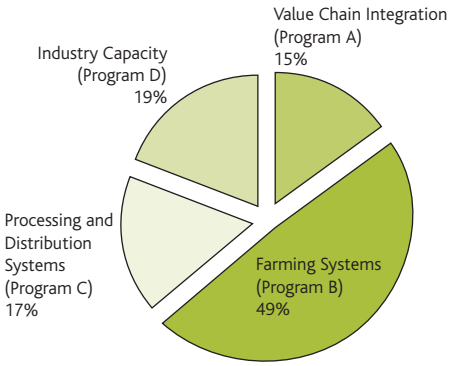
A gap in R&D activities against Program A was identified and in 2005–06 SRDC launched a technical report *The Value Chain of the Australian Sugar Industry*, which identified R&D opportunities focussed on strengthening value chain activities. A number of new projects commenced in 2006–07 which are based on the outcomes of this publication, while additional projects are due to commence in 2007–08.

Additional investments in Program D (Industry Capacity) can be attributed to Grower Group Innovation Projects. While investment in these projects was allocated to Program D, many of these projects are having a significant impact in Programs A (Value Chain Integration) and B (Farming Systems).

Table 2.3 Programs of the SRDC R&D Plan 2003–2008

Program	Title	Goal	Target Profile (% of total R&D investment)
A	Value Chain Integration	Adoption of whole-of-system solutions based on integrated management of the value chain, particularly at mill area and regional levels	20–25
B	Farming Systems	Adoption of sustainable sugarcane production systems based on integrated management of resources at farm level	45–50
C	Processing and Distribution Systems	Adoption of flexible cost-effective systems for sustainable harvest, transport, milling and marketing based on innovative design	15–20
D	Industry Capacity	Building human capacity for change, learning and innovation in the sugar industry	10–15

Figure 2.6 Distribution of project funding as at 30 June 2007



Partnering and Collaboration

Partnerships are another cornerstone of SRDC's investment portfolio.

The Corporation is committed to encouraging collaboration at all levels 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 seeing greater collaboration between regions.

By sharing knowledge and ideas the entire industry is benefiting 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 and learn. Through these projects, growers are adapting research findings to their local conditions. Researchers are also benefiting from the feedback they receive through this process.

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 2006–07, SRDC collaborated with the Department of Agriculture, Fisheries and Forestry and other rural research and development corporations on programs and initiatives including:

- Cooperative Venture for Capacity Building for Innovation in Rural Industries
- Farm Health and Safety Joint Research Venture
- Natural Resource Management Collaborative Venture
- Managing Climate Variability Programme
- Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry.

Partnering with industry to set the direction for SRDC

An important event on SRDC's annual calendar of events is its Regional Workshop Series.

In April and May 2007, hundreds of growers, millers, harvesters, researchers, extension and policy officers attended one of 10 regional workshops.

These workshops were an opportunity for participants to hear about SRDC's R&D Plan 2007–2012 and discuss new R&D opportunities that will come out of the plan.

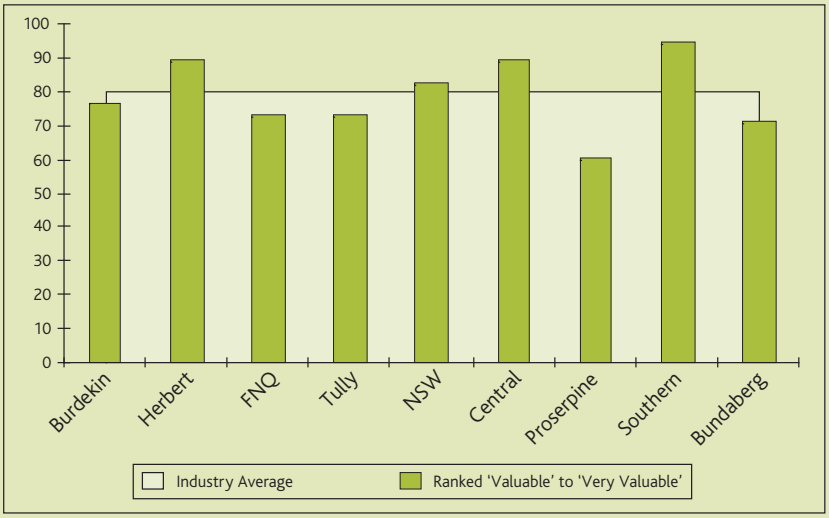
The strong message from participants was that SRDC should continue its emphasis on maintaining a regional and mill area focus.

Industry also indicated that there was an ongoing need to maintain current levels of investment in the user-driven R&D that focuses on the implementation of solutions tailored to local needs.

Most participants were keen to see an increase in R&D investments in the identification and rapid translation of emerging technologies.

People development was another area where people wanted to see current levels of investment maintained.

Feedback from Regional Workshop participants — How valuable are SRDC's investments in your region.
Percentage of responses marked 'valuable' to 'very valuable'



Growers, millers, harvesters, researchers, extension and policy officers took part in one of SRDC's Regional Workshops to help set the direction for R&D in the sugar industry.

Income and expenditure

SRDC's income and expenditure for 2006–07 compared to that forecast in the Annual Operational Plan 2006–07 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 2006–07

	Forecast $m	Actual $m
Income:		
Industry Levies	5.356	4.887
Australian Government Contribution	5.498	5.522
Other	0.450	0.726
Total Income	**11.304**	**11.135**
Expenditure:		
R&D Projects	10.182	9.070
Operation of SRDC	1.799	1.654
Total Expenditure	**11.981**	**10.724**

Income in 2006–07 was slightly lower than forecast due to reduced crop size; however, expenditure both on R&D projects and operations was lower than forecast. Reduced project expenditure was largely due to delayed commencement of some new projects. SRDC's cash reserve at 30 June 2007 increased to $8.894 million.

The SRDC Board has approved increased expenditure of $13.063 million in 2007–08, which is forecast to reduce cash reserves by $1.867 million. However, cash at the end of 2007–08 will remain above $5 million, and will represent 46 per cent of the following year's forecast expenditure, well within the Corporation's target range of 30 to 50 per cent of forecast expenditure.

Table 2.5 Five years at a glance

	2006–07		2005–06	2004–05	2003–04	2002–03
Revenue	$11.134m	⇑	$11.125m	$9.438m	$10.940m	$10.635m
Expenditure	$10.724m	⇑	$10.160m	$8.637m	$8.914m	$8.902m
Operating Surplus/(deficit)	$.411m	⇓	$.966m	$.801m	$2.027m	$1.733m
Total assets	$9.236m	⇑	$8.887m	$7.714m	$8.010m	$5.202m
Total equity	$8.557m	⇑	$8.146m	$7.181m	$6.386m	$4.373m
Industry contributions	$4.887m	⇓	$5.342m	$5.131m	$5.312m	$5.243m
Commonwealth Contributions	$5.522m	⇑	$5.195m	$3.756m	$5.191m	$5.120m
R&D Expenses	$9.025m	⇑	$8.458m	$7.018m	$5.592m	$5.539m
Employees	$.703m	⇓	$.781m	$.621m	$.506m	$.441m
Suppliers	$.966m	⇑	$.897m	$.947m	$.629m	$.580m
Average staffing levels	9.5	⇑	8.2	8	6.1	6.4

Chair and Executive Director's Report

The Australian sugarcane industry has responded well to the challenges and opportunities which presented themselves in 2006–07, and SRDC has continued to underpin advances in the industry, taking account of industry and government priorities and through targeted investment in research and development.

The Australian sugarcane industry 2006–07

The Australian sugarcane industry was strongly influenced by a number of key drivers which reinforced the need to focus on innovative ways to improve industry profitability and sustainability:

- Global competition: the recovery of sugar production in India and Thailand, continued expansion in Brazil.
- Climate change and climate variability: the need to understand, manage and respond to the potential effects of climate change and climate variability were as relevant to the sugarcane industry as all other agricultural and industrial sectors of the Australian economy.
- Human Capital: the availability of appropriately skilled human capital to support the industry challenged not only the growing, harvesting and milling sectors, but also research and support sectors of industry.
- Environmental and social sustainability, occupational heath and safety and enabling sciences.

Following the effects of Tropical Cyclone Larry and the detection of sugarcane smut on the eastern seaboard of Australia in 2005–06, the industry again faced the challenges of extreme weather conditions, with wet weather and flooding impacting on many cane growing regions in northern Queensland and drought in the southern region.

2006–07 was marked by a particularly volatile and challenging sugar price environment. The impact of the continued fall from the high sugar prices of 2005–06, coupled with the appreciation of the Australian dollar, provided no respite to the industry, which also faced rising input costs; especially for fuel, fertiliser and labour.

Responding to industry challenges

SRDC's investments continued to help industry respond to these challenges, and the Corporation's investment approach emphasised the importance of setting the right targets to position the Australian sugarcane industry to succeed.

Directors and staff travelled to Australia's sugarcane producing regions in April and May 2007 to meet with industry participants and researchers at its series of Regional Workshops. These workshops — now a regular feature of SRDC's calendar — provided an opportunity for hundreds of men and women of industry to have their input into R&D priorities. The feedback from these workshops allows SRDC to target research to deliver on the specific needs of regions and mill areas.

This industry input was augmented with frequent consultations with the Australian Government. The Australian Government released the new Rural R&D Priorities in May 2007 which are well aligned with SRDC's investment portfolio.

Over recent years, the Corporation has experimented with new and innovative approaches to maximize the impact from projects, which has seen the introduction of Travel and Learning Opportunity Projects (TLOP) and Grower Group Innovation Projects (GGIP) to support its established Research Projects and Scholarship program.

In 2006–07, SRDC conducted a review into its TLOP and Scholarship programs. These reviews were supportive of these investments, and noted the positive impact that they have made on industry, especially in the adoption of new farming systems for increased profitability and environmental and social sustainability. More information about the findings and recommendations of both reviews is available in Section 4 of this report.

November 2006 saw the launch of a technical report *An Analysis of Bagasse and Trash Utilisation Options* which provided industry with a valuable resource detailing the risks and benefits of various alternative revenue options being considered by industry.

SRDC invested in research to help the sugarcane industry respond and adapt to the potential effects of climate change. Researchers from CSIRO and QDPI&F worked with industry and technical experts to identify options, as well as to set R&D priorities for adapting to climate change. A publication outlining the research findings and options available to industry will be launched in 2007–08.

The detection of smut on the eastern seaboard of Australia in 2005–06 highlighted the continued need for investment in biosecurity. 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 investments also supported the development of the Sugarcane Smut Response Plan. Throughout 2006–07 SRDC continued to support industry to meet the challenge of smut, and future biosecurity challenges, by investing in research aimed at strengthening breeding, selection and biosecurity systems.

Key activities in 2006–07

SRDC's key activities in 2006–07 supported the industry to meet challenges and capitalise on opportunities by helping develop a culture of innovation. A significant effort was made towards developing the SRDC Research and Development Plan 2007–2012. The five-year plan is aligned to industry priorities as well as National and Rural Research Priorities. SRDC welcomed the announcement of new Rural Research and Development Priorities on 8 May 2007, and these have been integrated into the SRDC R&D Plan 2007–2012.

The consultative processes adopted in developing the plan provided government and industry stakeholders with opportunities to set future key deliverables and strategies for R&D. The plan is to be submitted for Ministerial approval in 2007–08.

A series of expert discussion papers, related workshops and subsequent publication provided a snapshot of where the industry currently is, where the industry needs to be in the future, and the industry's vision for how to get there. These discussion papers were released in May 2007 in a technical publication *Research and Development Strategies to Advance the Australian Sugarcane Industry*.

Projects across the Corporation's portfolio continued to increase collaboration between industry and researchers. Grower groups are increasingly working with researchers to implement the findings from research projects, and participants in Travel and Learning Opportunity Projects understand the value of learning and sharing with peers from other regions and industries.

This approach to fostering partnerships between industry sectors is strengthening the industry value chain and improving communication between regions. More information about the projects supported by SRDC throughout 2006–07 is provided in Section 4.

SRDC continued to invest in innovation and innovative thinking within industry. In 2006–07, the Corporation restructured its annual reward and recognition program the SRDC Innovation Awards, which culminated in the presentation of national and regional awards in April and May 2007. This program is the major vehicle within industry to celebrate the achievements of those individuals and groups who are taking an innovative approach to improving sugarcane industry sustainability and productivity. The Sugar Yield Decline Joint Venture team were named winners of the 2007 SRDC Innovation Award in recognition of their work in changing the way the industry has responded to declining yields. More information about national and regional winners is provided in Section 4.

Looking ahead

Australian sugar production will continue to be challenged in 2007–08 by the low sugar price, competition for labour and land, and an uncertain climate.

There is no doubt that industry needs to remain focussed on innovation as an avenue to improve productivity, profitability and sustainability. There are still significant gains to be made in the areas of adoption of improved farming systems, value chain integration, emerging technologies, and people development.

The issues of climate change and climate variability will challenge industry, but they will also create new opportunities for industry to capitalise upon. Industry needs to remain

responsive to identifying these opportunities to respond accordingly.

Water use efficiency and natural resource management issues will remain as focal points. The challenge will be for industry and the research sector to work in partnership to continue to demonstrate the industry's track record in these areas.

Emerging technologies provide the opportunity for the industry to meet the international competition. Continued investment in biotechnology and other technologies to improve business performance in all industry sectors is paramount.

Underpinning these technological advances is the need to develop the industry's people. SRDC will remain committed to working with individuals and groups to develop greater capacity to lead and embrace change in order to deal appropriately with the industry's increasingly complex operating environment.

SRDC will strive to deliver increased performance from its R&D portfolio and deliver positive outcomes for industry. The Corporation will also monitor the performance of its R&D investments to ensure the delivery of high value R&D. Strong emphasis will continue to be placed on participative R&D and a systems approach. Priority will be given to R&D investments that have readily measurable target outcomes, are user-driven and commercially-focused where appropriate, and are innovative.

Through these investments, SRDC will continue to deliver the positive outcomes needed by the Australian sugarcane industry to remain profitable, productive and sustainable well into the future.

R Muchow

R Granger

Our Outcomes

Corporate and Key Outcomes

SRDC Key Outcomes

To achieve its Corporate Outcome, SRDC invests in targeted R&D activities against six Key Outcome areas, identified in the SRDC R&D Plan 2003–2008.

Table 4.1 SRDC Corporate and Key Outcomes
SRDC Corporate Outcome
A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.
Key Outcome 1
An increasing and more reliable cane supply, primarily through the implementation of robust farming systems that enhance economic and environmental performance, and are less vulnerable to the impacts of adverse factors such as disease and climate variability.
Key Outcome 2
Facilitation of change which promotes adoption of whole-of-system solutions to enhance revenue and cost efficiency across the value chain at mill area and regional levels.
Key Outcome 3
Demonstration of environmental sustainability to the satisfaction of all stakeholders.
Key Outcome 4
Diversification of the income stream from products derived from sugarcane.
Key Outcome 5
Enhancement of human capacity and partnerships between industry, research and regional communities to underpin change, learning and innovation.
Key Outcome 6
An effective R&D capability underpinning industry futures.

SRDC Program Areas

SRDC's Key Outcomes are delivered through four Program Areas. Table 4.2 provides an overview of these Program Areas, as well as the performance of each against project targets in the SRDC Annual Operational Plan 2006–07.

Table 4.2 SRDC Program Areas — performance against project targets identified in the Annual Operational Plan 2006–07

	Program A	Program B	Program C	Program D
Focus	Value Chain Integration	Farming Systems	Processing and Distribution Systems	Industry Capacity
Outcome	Increased efficiency and overall profitability of the industry as an integral part of sustainable regional development.	Robust production systems that are both profitable and in harmony with the environment and societal expectations.	More productive and cost-effective processing and distribution systems in harmony with the environment and societal expectations.	A skilled human resource base and enhanced industry R&D capacity focussed on delivery of economic, environmental and societal benefits.
Output	Whole-of-system solutions based on integrated management of the value chain, particularly at mill area and regional levels.	Sustainable sugarcane production systems based on integrated management of resources at farm level.	Flexible, cost-effective systems for sustainable harvest, transport, milling and marketing based on innovative design.	Enhanced human capacity for change, learning and innovation in the sugar industry.
Project Targets (identified in the SRDC Annual Operational Plan 2006–07)				
Number of continuing projects				
Target	13	26	13	32
Actual	13	27	12	54
Number of new projects				
Target	7	7	5	1
Actual	8	12	6	4
Number of continuing scholarships				
Target	–	–	–	9
Actual	–	–	–	9
Number of new scholarships				
Target	–	–	–	4
Actual	–	–	–	5

Research Priorities

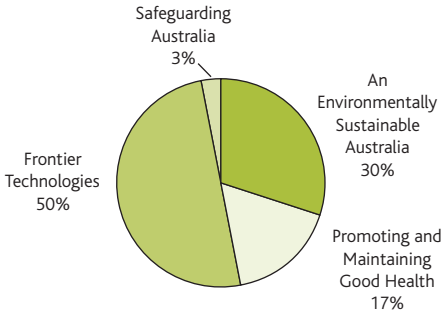
SRDC investments contribute to the National Research Priorities and the Rural R&D Priorities of the Australian Government, which were announced in December 2002 and March 2003 respectively.

National R&D Priorities

The four broad headings of the National R&D Priorities (NRP) are:

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

Figure 4.1 Allocation of SRDC funds by National R&D Priority



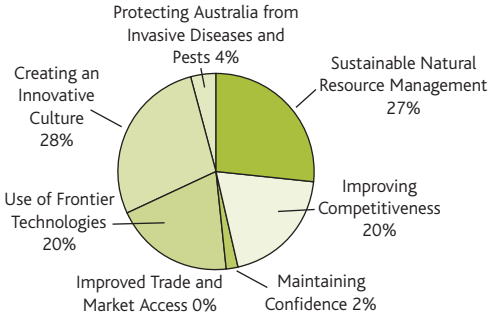
Note: Refer to Appendix A for a complete breakdown of allocation of SRDC funds. Figures have been rounded.

Rural R&D Priorities

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

- Sustainable natural resource management
- Improving competitiveness through a whole-of-industry approach
- Maintaining and improving confidence in the integrity of Australian agricultural, food fish and forestry products
- Improved trade and market access
- Use of frontier technologies
- Protecting Australia from invasive diseases and pests
- Creating an innovative culture

Figure 4.2 Allocation of SRDC funds by Rural R&D Priority



Note: Refer to Appendix B for a complete breakdown of allocation of SRDC funds. Figures have been rounded.

The Government's Rural R&D Priorities were revised on 8 May 2007. This Annual Report reports against the previous Rural R&D Priorities. Reporting against the revised priorities will commence with the SRDC Annual Operational Plan 2007–08.

Industry Priorities

In addition to the National and Rural R&D Priorities, SRDC is also guided by Industry Priorities. These priorities are outlined in the SRDC R&D Plan 2003–2008 and were determined by industry stakeholders after consideration of the current state and external environment of the Australian sugar industry.

The four industry R&D priorities are:

- whole-of-industry profitability through exploitation of opportunities for better integration across the value chain to ensure enhanced revenue and increased cost efficiency

- an economically, environmentally and socially sustainable industry that has sustainable farming, harvesting, processing and distribution systems and efficient and effective marketing systems for Australian sugar
- an efficient and effective RD&E capacity that collaborates strongly across R&D providers and with the various components of the industry value chain
- attraction and retention of people who are talented, well trained and committed to the sugar industry.

Section 4 outlines how SRDC investments are addressing these research priorities.

This section also outlines how SRDC is implementing the goals set out in the Statement of Intent, issued in response to the Parliamentary Secretary's Statement of Expectations.

Relationship between Programs, Outcomes and Priorities

The relationships between SRDC Program Areas, Key Outcomes and the National and Rural Research Priorities are outlined in Table 4.3. Appendices A and B provide details of the composition of each National and Rural Research and Development Priority attributed to each Program Area.

Table 4.3 Relationships between SRDC Program Areas, Key Outcomes and the National and Rural Research Priorities

National Research Priorities (NRP)	*An Environmentally Sustainable Australia*	*Promoting and Maintaining Good Health (strengthening Australia's social & economic fabric)*			*Frontier Technologies for Building and Transforming Australian Industries*		*Safeguarding Australia*
Rural Research & Development Priorities (RRDP)	**Sustainable Natural Resource Management**	**Improving Competitiveness**	**Maintaining & Improving Confidence**	**Improved Trade and Market Access**	**Use of Frontier Technologies**	**Creating an Innovative Culture**	**Protecting Australia from Invasive Diseases and Pests**
Program A Value Chain Integration *SRDC Key Outcomes 2 and 4*		✓			✓	✓	
Program B Farming Systems *SRDC Key Outcomes 1 and 3*	✓	✓	✓	✓	✓	✓	✓
Program C Processing and Distribution Systems *SRDC Key Outcomes 2 and 4*	✓	✓	✓	✓	✓	✓	
Program D Industry Capacity *SRDC Key Outcomes 5 and 6*	✓	✓	✓		✓	✓	✓

Key Outcomes 1 and 3 — *Achieving an increasing and more reliable cane supply and environmental sustainability*

1 — An increasing and more reliable cane supply, primarily through the implementation of robust farming systems that enhance economic and environmental performance, and are less vulnerable to the impacts of adverse factors such as disease and climate variability.

3 — Demonstration of environmental sustainability to the satisfaction of all stakeholders.

NRP — Environmentally sustainable Australia; Safeguarding Australia; Frontier technologies

RRP — Sustainable natural resource management; Maintaining and improving confidence in the integrity of Australian agricultural products; Protecting Australia from invasive pests and diseases; Frontier technologies

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. Systems thinking and a focus on the implementation of changed practice are therefore critical to success. This thinking underpins SRDC investments in R&D in these Key Outcomes.

Throughout 2006–07, SRDC supported a range of projects that were focussed on increasing the adoption of research findings. 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 thanks to these investments.

Improved farming system holds key to industry productivity

One of the longest running and extensive research and development activities undertaken within the Australian sugarcane industry over the last 15 years is the Sugar Yield Decline Joint Venture (SYDJV). This industry and SRDC-supported activity has designed, and verified the benefits of, an improved farming system based on minimum tillage, controlled traffic, trash blanketing and legume rotation crops. This farming system can deliver higher yields across the crop cycle through improved soil health, coupled with lower fertiliser, labour and machinery costs.

Phase 2 of the SYDJV concluded in 2006 and SRDC has funded a number of subsequent projects to build upon the outputs and recommendations from the SYDJV.

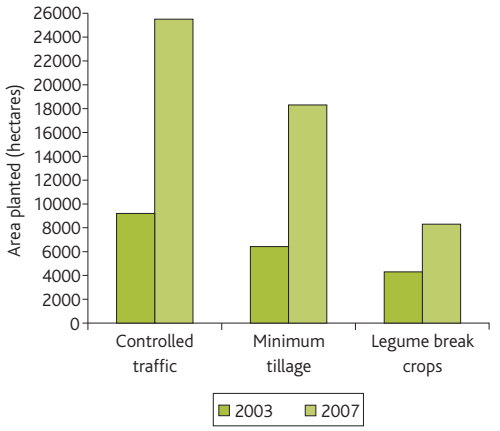
One such project is coordinating and providing support to these ongoing initiatives. This project benchmarked

the rates of adoption for elements of the new farming system and found that the area planted to sugarcane using controlled traffic in 2007 was 25 500 ha (9200 ha in 2003); minimum tillage planting, including zonal tillage was implemented on 18 300 ha in 2007 (6429 ha in 2003); and legume break crops were grown on 8300 ha in 2007 (4300 ha in 2003). (SRDC Project Code: **BSS286**)

> This industry and SRDC-supported activity has designed, and verified the benefits of, an improved farming system which can deliver higher yields across the crop cycle through improved soil health, coupled with lower fertiliser, labour and machinery costs.

Another project, which is facilitating the establishment of trials of the new farming system in the Central District, has shown that costs are lower for wider row spacing (1.8 m) and where a soybean fallow crop provides nitrogen for the subsequent plant cane. The lower costs have stimulated adoption of 1.8 m row spacing in particular, and about 10 per cent of the Mackay district is now on wider rows. The target for plantings to improved farming systems has been exceeded — 1467 hectares were established in 2006, well above the target of 300 hectares. (SRDC Project Code: **BSS269**)

Figure 4.3 Area planted to cane using elements of the new farming system



Controlled traffic

Grower groups who have been adopting the principles of controlled traffic through SRDC-funded Grower Group Innovation Projects are also reporting some pleasing results, with this aspect of the new farming system saving them time and money.

The Pinnacle Precision Farming Group in the Herbert River District found that the new farming system reduced the costs of planting operations by up to 57 per cent. Variable costs were reduced by $144 per hectare, the amount of machinery required to undertake the operations decreased and there was a five hours per hectare saving in labour.

The group reported that the controlled traffic farming system, with preformed beds and the use of a double disc opener planter in conjunction with global positioning systems (GPS) guidance, creates the chance for minimal cultivation and soil disturbance which in turn reduces the potential for run off and potential chemical, fertiliser and soil export off-site. (SRDC Project Code: **GPP003**)

In New South Wales, the MAD Cane Planting Group found that using a GPS fitted tractor to form beds greatly increased accuracy and consistency, and has reduced bed forming to a one pass operation. The group estimated that the costs of previous

practices were more than $96.65 per hectare, while the cost of bed-forming using a contractor with GPS guidance was $75 per hectare. (SRDC Project Code: **GGP010**)

‘Grower groups who have been adopting the principles of controlled traffic through SRDC-funded Grower Group Innovation Projects are reporting that this aspect of the new farming system is saving them time and money.’

SRDC’s investments in GGIPs are helping growers realise that GPS guidance creates minimal cultivation and soil disturbance, which in turn reduces the potential for run off and potential chemical, fertiliser and soil export off-site.

Zero tillage

Another key element of the new farming system is zero, or minimum tillage.

Since 2005, the NSW Farming Systems Group has investigated the potential of zero-till planting in the NSW sugar industry. As a result of their efforts, zero-tillage cane planting has been shown to be a viable alternative to conventional planting.

Trial sites were established in each of the three mill areas in NSW. Small plot harvesting in 2006 showed there were no significant differences in yield between conventional and zero-till planting, but economic analysis indicated that savings of $121 per hectare could be achieved when adopting the reduced input system. It is important to note that this figure does not include labour — which is one of the major savings possible through the zero-tillage system. The results of the group’s work suggest that the zero-tillage system can save over three hours per hectare in preparing the seedbed for planting. (SRDC Project Code: **GGP009**)

Zero-till planting has been shown to be a viable alternative to conventional planting by growers in New South Wales.

Break cropping

In Bundaberg, growers involved with the Sustainable Sugar and Peanut Agriculture Group are discovering the benefits of break crops. Through their SRDC-funded GGIP, the group hopes to determine if it is possible to produce a commercial crop of peanuts planted directly into uncultivated cane trash blanket fallow. They also hope to understand the implications for nitrogen use and cadmium uptake in this system. To date, their results have shown that while the direct-drilled peanuts had the lowest yield due to poor establishment they also had the lowest cadmium levels. (SRDC Project Code: **GGP028**)

Researchers working on a project to evaluate and implement a modified farming system in the Ord River Irrigation Area (ORIA) in Western Australia report that there is a positive attitude amongst growers about the system. Growers who are trialling the new system report excellent production of cane following a six to eight month lablab fallow. Lablab has been trialled as an alternative to a longer-term fallow (18 to 20 months) incorporating a winter horticulture crop. (SRDC Project Code: **WAA003**)

Understanding the economics of the new farming system

A project led by QDPI&F is increasing the level of economic information available to cane farmers to build into their management decision making and is contributing to faster adoption of the new farming system.

Using FEAT (Farm Economic Analysis Tool, a computer program developed by QDPI&F economists) growers are able to evaluate the economic considerations of implementing changes to their farming operations.

> ‘This QDPI&F led project is contributing to faster adoption of the new farming system.’

Using FEAT to inform decisions

Being able to put a value on the price of change has provided a valuable insight into the changes made by one Herbert grower group and their journey to adopt the new farming system practices. A case study conducted by QDPI&F officers using FEAT detailed the changes made by the group machinery contractor, and a comparison of the old and new farming systems adopted by a group member.

A focal point of the case study was the impact of the new farming system on the economic, social and environmental components of the farming business.

Analysis of the new farming system with a legume crop rotation revealed an increase in the farm gross margin by more than $22 000 and a reduction in tractor operation time by 38 per cent across the whole farm. This represents a return on marginal capital of 14.7 times the original capital outlay required by the group member.

Using the new farming system without a legume crop will still improve the whole of farm gross margin for group members by close to $7000 and reduce tractor operation time by 43 per cent across the whole farm.

For growers, this is a powerful decision making tool, giving them access to information that will help them evaluate the costs and benefits of making changes to their farming operations.

FEAT is giving growers confidence, and they are now more knowledgeable about the likely economic returns of new farming systems. While this project is primarily working with growers in the Herbert and Burdekin districts, growers from other sugar producing regions are also using FEAT as an important decision making tool. (SRDC Project Code: **DPI015**)

Protecting the industry from pests and biosecurity threats

Assisting the industry to manage sugarcane smut

Throughout 2006–07 SRDC investments supported industry to meet its obligations under the sugar industry's own biosecurity plans and Plant Health Australia's PLANTPLAN.

Prior to the detection of sugarcane smut on the eastern seaboard of Australia in June 2006, SRDC had supported a number of BSES-led projects designed to reduce the Australian sugarcane industry's genetic vulnerability to the disease.

One such project, which was completed in 2006–07, aimed to identify smut-resistant cultivars and breeding parents that have high yield potential and are adapted to the various environments within the industry.

As part of this project, smut-resistance ratings for 598 clones including 43 commercial varieties were obtained at a site in Indonesia with a high incidence of smut. The smut-resistance ratings obtained from this and earlier SRDC-funded projects have been used extensively in developing response plans in all regions of the sugarcane industry on the east coast as well as in the breeding program to select for smut-resistant varieties. (SRDC Project Code: **BSS256**)

A key activity in all the response plans to manage the smut incursion was the replacement of susceptible varieties with resistant varieties to minimise the economic impact of the disease. Smut-resistant varieties identified in this project and earlier projects have played a key role in the response to the smut incursion.

Smut resistant and intermediate crosses made up 75 per cent of the crosses made in 2006. Resistant crosses were up from 20 per cent in 2005 to 30 per cent in 2006. These changes will have a large impact on selecting high yielding smut-resistant varieties for the future. (SRDC Project Code: **BSS265**)

> ‘An SRDC-funded, BSES-led initiative is making information gathering a lot easier, by developing a decision-support tool. The tool will play an important role in managing diseases such as sugarcane smut.’

Finding the right variety of sugarcane for a particular environment plays an important role in improving profits for the sugar industry. But selecting appropriate varieties is a complex procedure. As the response to the sugarcane smut incursion demonstrates, planting one variety to a large proportion of a region makes that region vulnerable when a particular disease or insect incursion affects that variety.

An SRDC-funded, BSES-led initiative is making information gathering a lot easier, by developing a decision-support tool. This tool will assist growers, advisory staff and other industry groups in their selection of the most suitable varieties. The introduction of the decision support tool will play an important role in managing diseases such as sugarcane smut. (SRDC Project Code: **BSS294**)

Managing canegrubs

Greyback canegrub is the most damaging of the insect pests of Australian sugarcane. It has been difficult to predict outbreaks of this pest, and control measures can be demanding and costly.

SRDC-funded projects are working on developing tools to aid in the prediction and management of canegrubs. Grower groups in Mackay and Mulgrave in Far North Queensland will commence SRDC-funded GGIPs in 2007–08 to test these tools.

Better prediction and management of grub outbreaks should reduce the severity of grub damage during outbreaks and reduce the quantity of insecticides used during periods when control is not warranted.

The benefits of this work will be recognised across the value chain, with increased profitability for growers by maintaining cane yield and CCS (commercially recoverable cane sugar) during canegrub outbreaks, and through reduced costs of control treatments and replanting costs. Harvester operators will benefit through increased cane tonnage and from reduced wear on base cutter blades from harvesting grub-damaged stools. Millers will benefit through increased cane throughput, and reduced wear on milling train components from the high soil levels in cane supply during grub outbreaks, improved sugar recovery, higher quality sugar products, and reduced costs of filter stations and mud disposal.

While these projects have not progressed rapidly, due to generally low canegrub population densities, predicting population increases has been fairly successful using information on the size of the grub population, amount of damage in the vicinity in the previous year and the recent history of insecticide use. (SRDC Project Codes: **BSS266** and **BSS257**)

Dr Richard Mankin from the United States Department of Agriculture uses acoustic detection equipment to record canegrub sounds near Mackay as part of an SRDC-funded TLOP.

Cane grower Paul Vassallo listens to recorded sounds made by greyback canegrubs at the BSES Mackay Field Day in May 2007.

A BSES-led TLOP assessed the feasibility of detecting grub populations by the sounds that they make below-ground. A researcher experienced in acoustic detection of hidden insects, Dr Richard Mankin from the United States Department of Agriculture in Florida, worked with BSES entomologists near Mackay and Bundaberg for two weeks in April–May 2007, using equipment that he brought with him. The investigations

demonstrated that canegrubs could be detected readily in Queensland sugarcane fields during a time when worthwhile decisions could be made about future grub management.

Developing a farm management system

The Natural Heritage Trust-funded Farm Management System projects administered by SRDC have been completed. FMS tools and materials are now available on the Resource page of SRDC's website. Canegrowers and their advisors are now able to undertake an assessment of their specific farm risks across seven different criteria, and then use online materials and other resources to improve their economic, environmental and farm safety conditions. (SRDC Project Codes: **FMS001-008**)

Targeting weeds

SRDC supported a project which commenced in 2006–07 to increase sugarcane production by developing a precision imaging system that can be integrated with current technology spraying systems in order to specifically target difficult to control weeds in cane such as guinea grass, green panic and wild sorghum. Through this project, the National Centre for Engineering in Agriculture (NCEA) is working to develop a precision spot spray system which uses image analysis and plant identification technology.

It is anticipated that the equipment will be capable of differentiating the weeds from sugarcane in the row area and actuating a spray solenoid so that only the weeds are sprayed with herbicide in a single pass and with minimal over-spraying of the crop. (SRDC Project Code: **NCA010**)

Investigating options for precision agriculture in sugarcane

Over recent years, the Australian sugarcane industry has been aware of the potential benefits the application of precision agriculture could have to the sugarcane farming system. This awareness has increased recently as the technologies become more affordable and attractive to canegrowers.

In 2006–07, SRDC commissioned two expert discussion papers to evaluate the options for precision agriculture in the Australian sugarcane industry.

Researchers from CSIRO Sustainable Ecosystems and the NCEA presented the results of their analysis of the opportunities, advantages, limitations, risks and costs of the range of technologies that would be applicable to implement precision agriculture in sugarcane farming to a group of 60 participants at a workshop in May 2007.

There is potential for sugarcane growers to use precision agriculture for targeted application of pesticides, fertilisers, ripeners and irrigation to reduce costs, maximise yields and control environmental impacts. A synthesis of these reports and the outcomes of the industry workshop will be published and made available to industry in 2007–08. These initiatives will help set the direction of R&D into precision agriculture for the sugarcane industry. (SRDC Project Codes: **NCA009**, **CSE018**)

> ‘The outcome of these initiatives and the industry workshop will help set the direction of R&D into precision agriculture for the sugarcane industry.’

Strengthening the breeding program

Strengthening the reliability of the cane supply and improving the efficiency of breeding programs are two of the results expected from a BSES-CSIRO joint venture project.

For the last three years, researchers have been working on developing a system that will help get the balance between economic performance (suitability as commercial variety), and the genetic value (the individual's superiority as a parent) in the sugarcane breeding system right.

The research, funded by SRDC, BSES, CSIRO and QDPI&F, will have an immediate impact on variety release decisions and a longer-term impact on all stages of the breeding program.

Already the researchers are well on their way to designing a framework which will improve a breeder's ability to estimate breeding values for potential parental clones.

Project leader Dr Xianming Wei said that the BSES-CSIRO Plant Improvement program currently uses a selection index that incorporates cane yield, CCS and fibre content, while other industry traits are screened for at later stages of selection.

"We are developing a system that will take into account economic and biological data from across all regions and selection stages to try and enhance the industry's economic performance through genetic improvements in breeding and selection," Dr Wei said.

"For example, the current system has tended to put a higher weighting on total cane yield rather than CCS.

"Recognising the effect this could have on the profitability of the whole industry, clones with a higher CCS would receive a boost in their weighting during selection under the new framework," he said.

"This project is about improving the efficiency of our breeding program with better defined breeding objectives.

"It's about breeding varieties the industry needs and breeding to maximise economic return for the whole industry."

Economic breeding values for parental clones have been predicted based on information from selection processes. These values were used to select the 'best' parental clones in the 2006 and 2007 crossing program.

Economic genetic values have also been predicted and will be used to select clones in the 2007 annual variety selection meetings.

"The implementation of these values is expected to have great positive impact on the breeding program.

"More accurate genetic values would make us move towards the objective faster, producing greater gains," Dr Wei said. (SRDC Project Code: **BSS267**)

Improving water quality

A number of SRDC-funded projects are taking a grower-centred approach to improving environmental management of water in sugarcane catchments. As well as seeking a long-term improvement in water quality and groundwater management, these projects will lead to an improved relationship between industry, environmental and community groups.

In the Burdekin, one group of growers is working with local industry organisations to increase grower capacity to monitor groundwater depths and quality. This project, which started in 2006–07, is aiming to improve communication and understanding between growers, researchers and organisations such as the Department of Natural Resources and Mines, Burdekin Bowen Integrated Floodplain Management Advisory Committee Inc. (BBIFMAC) and SunWater.

A baseline survey of the 10 farmers in the Upper Haughton area conducted as part of this project indicated a generally low level of understanding on factors affecting groundwater and the management of groundwater in the area. This project should provide valuable information on the importance of the various sources that contribute to rising groundwater (leaking channels and tailwater dams, irrigation). It will also provide growers with information and resources including monitoring equipment to better manage groundwater. (SRDC Project Code: **BBF001**)

Another Burdekin based project which was completed in 2006–07 will have ongoing impacts and has been instrumental in helping growers take ownership of water quality issues. A trailer with sampling and storage equipment allows farmers to collect and analyse water coming from cane blocks following irrigation or rainfall. Fifteen growers have been trained in the use of the water-sampling trailer.

The MAFIA (Mulgrave Area Farm Integrated Action) grower group was involved in earlier research that indicated nitrate-N in tail-water following the first two or three irrigations on recently-fertilised young ratoon crops. In addition to concerns about the loss of N-fertiliser, growers were also aware that nitrate in the water leaving the farm may contribute to environmental degradation.

Surveys of the participating growers and other Burdekin growers indicated that the awareness of water quality issues, and links between on-farm practices and water quality, increased over the period of this project. The implication is that the availability of the equipment, training in its use, and use of the equipment by some growers, has resulted in greater ownership of the problem of loss of nitrogen in particular from farms in water run-off. Over half of the respondents indicated that they had made changes to farm practices as a result of greater awareness of the risk of losing farm chemicals in run-off water. (SRDC Project Code: **MAF001**)

Likewise, one of the major success factors arising from a grower-focussed project in the Herbert is the increase in growers' knowledge of water quality and ecological impact of farm runoff. Almost 20 growers have been involved in the project, and the water quality at 11 catchments has been sampled. The project has set the scene for off-farm runoff to be core business for sugarcane growers. The simple and cost effective tools provide real time information on water quality, which in turn relates directly back to farming practice.

The outcomes of the first year's results of water quality testing by growers were substantial. Participating growers received training in collecting and storing water samples, using nutrient test strips, and pH and dissolved oxygen meters. They maintain Paddock Journals, recording details of cultivation, herbicide, pesticide and fertiliser applications and the times of harvest in each cane block. Growers used the simple tools to measure nutrient and sediment runoff from their properties. In addition, volume of runoff, pH and conductivity was also recorded in these runoff events. Together, these activities ensure that growers are able to manage their farm operations to maximise water quality in the runoff from their farms. (SRDC Project Code: **CG013**)

Growers are using simple tools, including these test strips, to manage their farm operations to maximise water quality in the runoff from their farms.

A CSIRO Sustainable Ecosystems and BSES-led project is seeking to develop a systems approach to water and nutrient management for future cane production in the Burdekin. This project is seeking to develop a range of proven farm management options for improved water, nutrient and crop management that will maintain or increase profitability, whilst controlling rising water tables, reducing the risk of irrigation-induced salinity and improving off-farm water quality.

> 'One of the major success factors arising from a grower-focussed project in the Herbert is the increase in growers' knowledge of water quality and ecological impact of farm runoff.'

Throughout 2006–07, the project team has put a substantial effort into developing a best management practice (BMP) package for the Burdekin. The package consists of five phases that identify management practices for improved off-farm water quality. (SRDC Project Code: **CSE012**)

Using irrigation resources sustainably

The objective of another MAFIA-led project in the Burdekin, with support from the Burdekin Dry Tropics Board, is to directly compare a lateral move overhead low pressure (OHLP) irrigation system with the conventional furrow irrigation system used in the Burdekin, to determine relative cost-efficiencies and environmental outcomes. Economic comparisons will also be made with an established trickle (drip) irrigation system.

The baseline data are already showing considerable savings in applied water (translating to cost savings as well), along with no runoff under the OHLP system. Samples were taken for nutrient and pesticide analysis, using the water quality monitoring trailer funded through the project described earlier. Pieziometers and Enviroscan equipment has also been set up to quantify the water movement at depth under OHLP and furrow irrigation systems.

This project will help to demonstrate whether alternative irrigation systems are viable options within the Burdekin, and provide a pathway for implementing a green cane harvesting and trash blanketing system in the Burdekin. (SRDC Project Code: **MAF002**)

The MAFIA Group is undertaking research to determine if alternative irrigation systems are viable options in the Burdekin. The effectiveness of this overhead low pressure irrigation system is being compared with conventional furrow and trickle irrigation systems.

Several organisations are concerned with the supply of irrigation water in the Burdekin, including the Queensland Department of Natural Resources and Water (QDNR&W), SunWater and North and South Burdekin Water Boards. A project, led by CANEGROWERS, seeks to simplify the water supply arrangements and ensure that all organisations have a common understanding of the organisational policies that affect environmental and economic performance. The CEOs of all relevant organisations have agreed to consider the appropriate improvements when these are identified. (SRDC Project Code: **CG018**)

A BSES and CSIRO Sustainable Ecosystems-led project is facilitating grower uptake of irrigation and scheduling tools, including WaterSense — developed as part of an earlier SRDC-funded project.

The operational phase of this state-wide web-based irrigation scheduling project commenced during the 2007 irrigation season with the commissioning of operational and monitoring equipment in four sugar irrigation regions — Maryborough, Bundaberg, Burdekin and Atherton Tableland. Initial activities have already led to improvements to the conduct of the project and the features and functions of WaterSense.

Adoption of scheduling tools will assist growers with priority setting, development of skills in optimising water resources, support of BMP principles that result in more efficient use of the available water resource, enhanced capacity to best manage low water supplies, and reduce inappropriate water use. (SRDC Project Code: **BSS297**)

Understanding the link between genetics and management

Researchers from CSIRO's Sustainable Ecosystems are working on a project to increase sugar yield per hectare through increased CCS and cane yield by capitalising on better understanding of the interactions between genetics and management.

> ‘This study highlights the importance of using irrigation water more cost-effectively and could lead to more efficient irrigation and breeding for drought tolerance and improved water use efficiency.’

Trials have shown that lodging, or loss of erectness in sugarcane crops, can reduce sucrose yields by up to 25 per cent.

How WaterSense is winning the west

Like cane growers in other sugar producing regions, growers in the Ord River Irrigation Area are keen to reduce water use and combat rising water tables, and have been doing so for the last three years with the help of CSIRO researchers and a web-based irrigation package called WaterSense.

Benchmarking surveys found that cane farmers in the Ord reduced their annual application of irrigation water to sugarcane from 35–40 megalitres per hectare to an average of 21 megalitres per hectare without loss of sugar production.

Suzi Silvester, agronomist with Oasis Farms, said that the model is working really well for them and is saving them a lot of time and leg work.

"We rely on WaterSense and it has a proven track record of giving us the correct data," Ms Silvester said.

"It is so easy to use and is a great planning tool — I use it everyday. It is also saving us water as we are only watering when it is needed," she said.

Geoff Inman-Bamber of CSIRO's Sustainable Ecosystems said that results from scheduling experiments in the Ord demonstrated that irrigating more than estimated crop demand based on evapotranspiration (the sum of moisture lost through evaporation and transpiration of water from the plant) did not translate to increased yield.

"R&D in other regions suggests that significant water savings could be made while maintaining or even increasing sucrose yields by implementing different irrigation schedules (less water early in the crop growth to reduce the tendency for early lodging for example)," Dr Inman-Bamber said. (SRDC Project Code: **CSE007**)

Bill Webb checks Bowen Ratio Energy Balance equipment in the Ord. The data collected are used to fine tune irrigation requirements.

Lodging is widespread in the Australian sugarcane industry, particularly in irrigated and high-rainfall regions. Once lodging occurs, a crop's response to irrigation can be limited to the point where there is no further benefit after a relatively small amount of water has been applied. This project is demonstrating that as well as genetic improvement, agronomic management can also reduce lodging.

This study highlights the importance of using irrigation water more cost-effectively and could lead to more efficient irrigation and breeding for drought tolerance and improved water use efficiency. (SRDC Project Code: **CSE014**)

Adopting best practice nutrient management

Throughout 2006–07 SRDC has supported a number of projects that aim to assist the industry counter the rising costs of fertiliser and the increasing need to demonstrate environmental sustainability.

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 through accelerated adoption of integrated nutrient management.

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. In many instances, the best-practice nutrient management options adopted in trials have produced comparable yields to those obtained from nutrient applied at usual 'grower' rates. The maintenance of yield, despite mostly lower nutrient inputs, has aroused the interest of the growers and resulted in many of the participants agreeing to continue the trials for at least another season. This is a positive outcome, especially in terms of facilitating the use of best practice nutrient management on-farm and ultimately across districts. (SRDC Project Code: **BSS268**)

Likewise, the overall objective of a CSIRO Sustainable Ecosystems project is to reduce nitrogen fertiliser applications on sugarcane farms to decrease production costs to growers and reduce nitrogen losses to the environment. The project team is working with growers in Mossman, Bundaberg, Maryborough and New South Wales to develop and implement the 'replacement concept' of nitrogen management. This will be achieved by better defining the amount of nitrogen lost through harvested cane, trash burning (where applicable) 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. (SRDC Project Code: **CSE011**)

These projects are closely integrated and SRDC facilitates a joint annual industry workshop to promote improved nutrient management, which will result in targeted fertiliser application, lower costs and reduced nutrient losses in off-farm water flows, while maintaining or enhancing sugar yields.

SRDC investments are helping growers and their advisors know and understand their soils and are having an impact on the use of best practice nutrient management.

Key Outcomes 2 and 4 — *Enhancing the value chain and diversifying the income stream*

2 — Facilitation of change which promotes adoption of whole-of-system solutions to enhance revenue and cost efficiency across the value chain at mill area and regional levels

4 — Diversification of the income stream from products derived from sugarcane

NRP — Promoting and maintaining good health; Frontier technologies.

RRP — Improving competitiveness through a whole of industry approach; Using frontier technologies; Creating an innovative culture; Maintaining and improving confidence in the integrity of Australian agricultural products; and improved trade and market access.

SRDC investments in these Key Outcome areas are helping industry to realise opportunities to increase the profitability and sustainability of the entire value chain. In 2006–07, SRDC made a significant investment in projects which focused on identifying and implementing whole-of-systems solutions.

The SRDC publication *Value Chains in the Australian Sugar Industry*, which was launched by the Parliamentary Secretary, The Hon. Sussan Ley MP in March 2006, identified new opportunities in value chain research. Several new projects which commenced in 2006–07 are derived directly from initiatives identified in this publication.

SRDC also invests in R&D to identify options to diversify the income stream. In the longer term, these initiatives have the potential to make a significant contribution to the national economy.

SRDC is a core party to the CRC for Sugar Industry Innovation through Biotechnology (CRCSIIB) which commenced in August 2003. SRDC has committed $4.9 million of project funding over seven years from 2003–04. The CRC has considerable potential to rejuvenate the sugar industry through elite sugarcane varieties with high sugar production potential or which can produce specialist materials such as bioplastics, oligosaccharides, enzymes and pharmaceuticals.

Capitalising on the potential effects of climate change and variability

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.

By workshopping possible scenarios, the researchers were able to get a feel for what those changes may mean along the entire value chain. For example, an increase in the atmospheric concentration of carbon dioxide is known to increase productivity

in plants which could lead to a net increase in cane yield; however, a reduction in the amount of effective rainfall might counter any possibility of realising these benefits.

The workshops also allowed the industry to identify strategies to adapt to changes in the whole industry and across the regions, identify the role of policy regarding climate change on agriculture, and to identify the knowledge gaps and areas requiring future R&D.

A publication outlining the report's findings, along with a review of workshops conducted as part of this research will be launched in 2007–08. 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 Code: **CSE019**)

By workshopping possible climate change scenarios, researchers and industry were able to get a feel for what those changes may mean along the entire value chain.

SRDC is a partner in the joint RDCs Managing Climate Variability Program which is focussed on increasing Australia's capacity to capture opportunities and manage risks related to climate variability. The 2007 evaluation into the impact of the joint venture showed that the initiative has produced a cost benefit ratio of 4.74:1 and a return on investment of 28 per cent for a net present value in excess of $350 million.

Benefits have included increased profit and reduced income risk for farmers who use seasonal climate forecasts and the accompanying decision tools. The evaluation also suggests that sugarcane farmers have increased their skills in using seasonal forecasts.

Building on the success of this phase of the program (which was completed in 2006–07) the new phase of this joint venture will address seasonal forecasting, water resources, agricultural applications and adaptation to climate change. (SRDC Project Code: **CVA002**).

"SRDC is a partner in the joint RDCs Managing Climate Variability Program which is focussed on increasing Australia's capacity to capture opportunities and manage risks related to climate variability."

SRDC participated in a joint initiative commissioned by Land Water Australia in partnership with other rural research and development corporations and non-government organisations to inform the work of the Prime Minister's Task Group on Emissions Trading. A consultant was appointed to assist the development of a workshop and prepare a submission on *"Rural industries and carbon trading: opportunities, barriers and risk management"* to the Task Group on Emissions Trading.

The paper highlighted that the development of an emissions trading scheme has potential impacts on agriculture and forestry. The paper also outlined the features of the

sector which should be taken into account in the emissions trading scheme and discussed possible ways of incorporating agriculture in an emissions trading scheme. The paper also identified the need for more research to be able to fully understand the benefits of including agriculture and forestry in a mandatory emissions trading scheme. This project will help position agricultural industries, including the Australian sugarcane industry, to benefit from the opportunities associated with emissions trading. (SRDC Project Code: **LWA001**)

Defeating the Autumn Predictability Barrier

Climate forecasts are crucial for Australian sugar industry planning. Knowledge about the chance of rain post-autumn (September to November) early in the year (January to March) offers enormous scope for enhancing forward planning activities across several industry sectors. It is widely recognised that many climate forecasting systems have limited skill when predicting across autumn. Consequently, industry has not been able to consult climate forecasts about harvest season rainfall early in the year. This has meant that decisions made early in the year that are impacted by harvest season rainfall are made without the aid of long-term rainfall forecasts.

This no longer needs to be the case. A climate forecasting system developed by Prof. Allan Clarke from Florida State University has been extended to forecast harvest season rainfall for the Australian sugar industry. Whilst the model has passed the stringent scientific peer review process, it must now pass the 'industry test'.

Throughout 2006–07 the project team worked with case study groups in Ingham and New South Wales to scope the potential for the model to be used as a planning tool. Research generated from this project highlights the potential of this new long lead forecasting procedure to aid industry decisions that have previously been made in isolation of predictions of the likely amount of rain. (SRDC Project Code: **JCU027**)

> ‘Research generated from this project highlights the potential of this new long lead forecasting procedure to aid industry decisions that have previously been made in isolation of predictions of the likely amount of rain.’

Improving adoption across the value chain

A CSIRO Sustainable Ecosystems-led project is working to develop knowledge and understanding of the social factors responsible for rapid adoption of technology. This work will go a long way to ensuring that complex and emerging technologies are adopted by a wider cross section of the industry.

Identification and implementation of appropriate adoption strategies for emerging technologies is a key requirement of research outcomes. Consequently, researchers are finding that working in partnership with industry focus groups develops research outcomes that are novel, practical and useful. However, this raises a question about the next step — application of emerging technologies to benefit an industry-wide value chain spanning many regions, each requiring regionally dependent solutions. To achieve this, the project has worked towards identifying ways for researchers to deliver new technologies to new regions, in other words, designing multi-regional adoption strategies that are adaptable to each region's unique needs.

The adoption strategy for each region and context involved a combination of awareness raising, action learning and extension activities.

The project focused on increased understanding on the adoption of complex technologies such as climate forecast tools, irrigation management tools, and decision support systems to improve nutrient management; and on redefining of technology and tools, refining and evaluating the adoption strategies proposed.

The outcomes of the project show that adoption and understanding of technologies is not a simple task and requires capacity building by industry end users, and by scientists as part of the action learning cycle.(SRDC Project Code: **CSE009**)

From waste product to profit centre

Bagasse and trash are two by-products of the sugar milling process, and offer a potential alternative income stream for the industry. In 2006–07, SRDC released a publication which documented an analysis of options for exploitation of bagasse and trash, undertaken by SRI@QUT. The high level of industry interest in this project, and subsequent *SRDC Technical Report Analysis of Bagasse and Trash Utilisation Options Report,* reinforces the need for SRDC's continued investment in this area. Strategic research on emerging technologies is required to enhance the sugarcane industry's competitive edge in the global marketplace.

The results of this research suggest that the best returns on investment are from the production of biodiesel and in pulp and lignin production from bagasse — with or without trash as an additional feedstock. (SRDC Project Code: **QUT008**)

Paper and power, two of the options for exploitation of bagasse and trash evaluated in an SRDC technical report released in 2006–07.

Bagasse pulp focus of SRDC Scholarship student's research

Although bagasse is used as a fibre source for paper manufacture throughout the world, no bagasse pulp industry exists in Australia.

The reasons for this include processing and product quality issues. Processing issues arise because bagasse pulp has relatively poor drainage properties compared to wood pulp, due to the high fraction of very short pulp generated from "pith" fibres at the core of the sugarcane stalk. Product quality issues arise mainly because the pulp is weaker due to fierce mechanical action imposed on the bagasse in the sugar milling train.

Through his SRDC-supported scholarship, Tom Rainey is investigating some options to improve the drainage properties and the product quality of Australian bagasse pulp.

Around 30 samples of bagasse that had been treated in a variety of ways prior to pulping were pulped at the Australian Pulp and Paper Institute in Melbourne. The effects of fractionating the bagasse into different sizes prior to pulping and the mode of juice extraction (i.e. a milling train or a diffuser), are amongst the variables being investigated.

Through this project, Mr Rainey has found that, by carefully selecting and treating bagasse prior to pulping, the pulp can be made to have superior drainage properties compared to a wood pulp.

The next stage will be to investigate the compressibility and physical strength properties of Australian bagasse pulp that has been treated to have especially good drainage properties.

Reducing sugar losses through harvesting and milling processes

For growers and millers alike, research into technologies which could reduce the moisture content of mill mud (a by-product of the milling process) and reduce the sucrose lost with the mud offers promise to improve economic and environmental performance.

Many mills experience relatively high losses of sucrose in mud when they reduce the amount of wash water applied to the mud filter, with estimates suggesting this costs medium to average sized mills up to $750 000 a year.

The high moisture content of mill mud (typically 75 to 80 per cent) results in high transportation costs for the redistribution of mud on cane farms. For growers, the soil conditioning and nutrient benefits of mill mud can be a valuable replacement for commercial fertilisers.

Drier mill mud should lead to improved farming practices as the drier cake is more suitable to controlled distribution and incorporation into cane land. The Maryborough Advanced Grower Group is developing a precision mill mud applicator through an SRDC-funded GGIP (SRDC Project Code: **GGP015***).*

Two SRI@QUT-led projects are assessing alternative processes that could prove efficient in removing additional moisture (while ensuring low residual sugar content) from mud.

If successful, and the technology is developed and implemented in factories, it is expected that higher sugar production could be achieved through a reduction in the sucrose lost with the filter cake.

This would also lead to an improved system for economically distributing mill mud widely throughout the cane area, and improved farming practices as drier cake is more suitable to controlled distribution and incorporation into cane land. (SRDC Project Code: **SRI134** and **QUT012**)

Another SRI@QUT-led project focussed on reducing sugar losses undertook a preliminary investigation to assess methodologies that could be used to determine sucrose concentration on trash so that a harvester operator or field officer can quickly determine sucrose loss in the field during harvesting.

The project examined equipment that can be used to process harvest residues in the field and assessed a number of devices for sucrose measurement.

The investigators found that the relatively simple method of estimating the brix (the mass ratio of dissolved sucrose to water in a liquid) of a solution from cane trash, using a refractometer, was effective at indicating sucrose levels. To exploit this concept, further R&D is required to automate the preparation of trash samples and subsequent brix measurement. This would allow installation on a harvester for readings on-the-go, or as an extension tool operated from a utility vehicle across harvester groups and even across mill regions. (SRDC Project Code: **SRI142**)

Increasing revenue from mill products

Cogeneration represents an additional source of income for the industry. The presence of bagasse moisture (typically 50 per cent by mass) significantly reduces boiler efficiency and therefore the power export potential of bagasse-fired power plants. A reduction in bagasse moisture from 50 to 42 per cent delivers an increase of four per cent in the thermal efficiency of a modern bagasse fired boiler. In terms of cogeneration revenue, this translates to approximately $6 per tonne of dry fibre equivalent recovered from storage.

This project will provide a good platform for further research into developing *in-situ* drying of bagasse stockpiles as a low cost and energy efficient method for bagasse moisture reduction to further increase cogeneration power revenues to the industry. (SRDC Project Code: **SRI136***)*

Cleaning solution adds sparkle to mills

Research undertaken by SRI@QUT and funded by SRDC promises to simplify the cleaning of evaporators in sugar mills — saving time and money.

Cleaning evaporators is a significant disruption for sugar mills. While the approach taken differs from mill to mill, the usual procedure often involves a two or three-step process which is labour intensive and time consuming.

Dr Bill Doherty, who has been leading the project, said that the development and testing of different types of cleaning solutions will develop a one-step procedure that is cheap, convenient, effective and fast.

"Over the last year, the new solutions have been on trial at the Tableland and Mulgrave Mills," Dr Doherty said.

"The new formulation will mean cost and time savings for industry," he said.

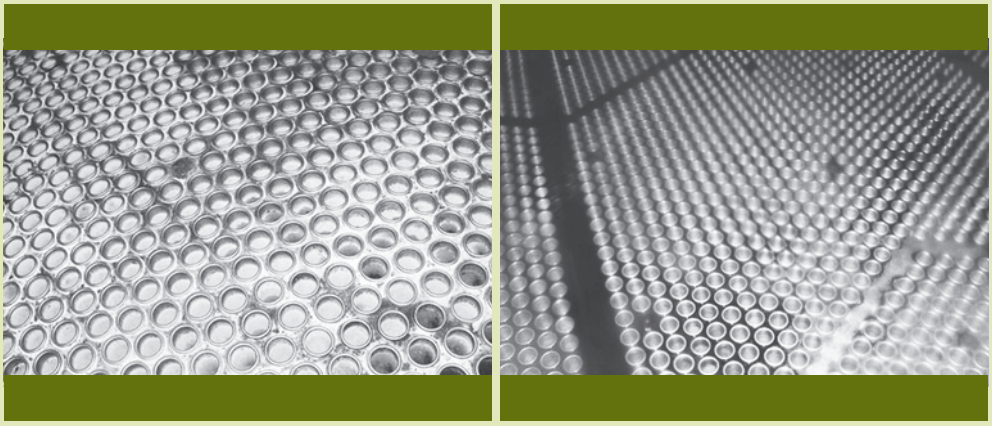
"Mills should be able to extend the time between cleaning stops typically from 14 to 18 days."

The new formulation has the added benefit of reducing the down time needed for chemical cleaning of the evaporators.

Over the life of the crushing season, the project team estimates that the new solution will help boost production of sugar by 310 tonnes and molasses by 464 tonnes each year for an average size mill.

For mill workers, the new formulation also offers improved workplace health and safety.
(SRDC Project Code: **QUT011**)

All up, the results of this project are great news for the performance of mills and for the industry in general.



Before and after. Showing the difference a good clean can make — research into a solution for cleaning the evaporators in sugar mills will help the industry save time and money.

Improving sugar quality

Improved clarification of juice can result in higher-quality raw sugars. A SRI@QUT-led project is examining a range of options to remove a greater proportion of the impurities during clarification. Studies include replacing or supplementing lime with new flocculants and optimising the concentration of lime saccharate in the clarifier. (SRDC Project Code: **QUT004**)

As part of a second SRI@QUT project, researchers and millers are working together to determine the factory benefits from full implementation of syrup clarification. This project will give mills interested in identifying niche markets an opportunity to produce a crystal product that is outside the range of sugar grades produced to be marketed overseas as raw sugars. (SRDC Project Code: **QUT005**)

Enhancing cost-efficiency in harvesting systems

A number of SRDC-funded projects have been working towards enhancing cost-efficiency in harvesting systems.

A CSR Sugar-led project is in its second year of benchmarking harvest group practices in the Burdekin. This knowledge will enable harvest groups throughout the Australian sugar industry to compare each other's performance to determine:

- where harvest groups can lower costs and increase efficiencies
- differences in the operational and cost performance of groups with different levels of adoption of recommended harvesting practices
- the impact of group situation/conditions and modes of operation on profitability
- the costs and efficiencies of harvesting different farming systems
- the benefits of harvesting best practice on ratoon performance.

The project involves setting up the harvester with data loggers linked to GPS systems to map yields and log other data. The total cost of installing the required infrastructure is $4000 — a relatively attractive proposal for harvester owners. The harvester owners in the project value the benchmarking reports and are starting to plan ways to use the reports as part of the management of their business.

> ‘The outcomes of this project will reach far wider than originally envisaged. This project has effectively been a key stimulant for adoption of precision agriculture in the Burdekin.’

The combination of the ability to generate benchmarking reports, in addition to yield maps, creates a win-win situation for farmers and the harvester — they both receive valuable information to assist them to better manage their businesses.

An associated project funded by DAFF will develop software that will automatically process yield maps for use by growers and their agronomic service providers.

The outcomes of this project will reach far wider than originally envisaged. This project has effectively been a key stimulant for adoption of precision agriculture in the Burdekin. (SRDC Project Code: **CSR033**)

The New South Wales sugarcane industry is set to benefit from the results of a Clarence Harvesting Cooperative-led project which seeks to provide near real time information about the performance of the various

stages of the value chain to all participants at NSW mills. Information includes GPS for location of trucks, number of full and empty bins on pads and other factors concerning the progression of the harvest. Rather than generating new information, this project is focussing on utilising information that is already available. This will be accessible via a web site and will be available to all who have authorised access (e.g. growers, harvest supervisors and mill staff). In addition, this project will transmit information back to the harvester operators, so that they have up-to-date information to enable them to optimise the management of their daily operations. (SRDC Project Code: **CHC002**)

A NSW Sugar Milling Cooperative (NSWSMC)-led project which commenced in 2006–07 is hoping to develop a more efficient harvester chopper unit that will produce high quality (low damage) billets. The unit will reduce loss of juice by improved cutting action and will also provide a means of varying billet length (without loss of quality) in order to control bulk density of product. This is particularly important for achieving adequate bin weights for transport of whole-crop material, but would also improve efficiencies for conventional material.

From the initial kinematic modelling, the project team have agreed on the dimensions and design for a single-drum chopper that should provide low cane and juice losses. A prototype of this will now be constructed and tested. (SRDC Project Code: **NSC012**)

Grower Group Projects put harvester operators in the driver's seat

Since first being offered by SRDC in 2004–05, Grower Group Innovation Projects have been putting growers and harvesters in the driver's seat for change. A number of projects which commenced in the first round were completed in 2006–07, with industry already benefiting from many of the results:

- Work undertaken in the Herbert to develop an incentive-based harvesting system is spreading to other sugarcane producing regions. This system rewards growers for changes they make to their farming operations which improve harvesting efficiency. Growers are realising the advantages of the payment system, which utilises data loggers installed on harvesters to gather information relating to harvester efficiency. The system encourages economical harvesting on farms, a benefit to the farmer and contractor. Despite poor harvest conditions throughout the 2006 harvest season due to wet weather, a number of growers received rebates because their crops were more economical to cut. (SRDC Project Code: **HGP008**)
- Rising costs for the harvester and very limited capacity for the growers to accept a harvesting charge price increase were two of the issues behind a project that sought to improve harvesting efficiency by demonstrating how whole of system changes can reduce costs in the field. These changes have been implemented by growers leading the project and they are working with their local region to encourage others to consider implementing the changes to their own farming operations (SRDC Project Code: **HGP006**)
- Another harvesting group is investigating if a reduction in sugar and juice losses during harvesting can be achieved through the development of a novel, cost-effective modified rotary pinch chopper system. The concept of producing variable-length billets was demonstrated successfully. The blade arrangement produces two billets nominally 295 mm in length for every billet of 205 mm. The packing density (in kg/m^3) for billets produced by this chopper arrangement improved by 2.7 per cent compared with standard chopper drums, which helps increase bin weights. (SRDC Project Code: **HGP003**)

Working together to create opportunities

The Mossman sugarcane industry has recognised the need to change their practices and adopt measures to ensure they will survive. SRDC is supporting a project that is bringing all industry sectors together to address regional issues. In broad terms, the project is focussed on best management practice in cane farming (an extension program was developed through the project which was tailored to the specific needs of the local sugar industry), business planning, harvest and transport rationalisation and community engagement.

This project facilitated the formation of the Vision 2010 Group which has brought together key members of the industry to work together to improve the effectiveness of the local industry. Over the life of this project, a major outcome has also been positive engagement with the local community.

Spillover benefits from this project have seen the Mossman Central Mill and other industry participants work with a number of international organisations to produce and market a diverse range of value adding products, including an edible fibre for the Japanese market produced from bagasse; a range of juice and fibre products produced with cane separation technology; and a natural low glycaemic index sugar as well as cocoa and chocolate production. Work undertaken through this project,

- The move to whole-of-crop harvesting in NSW from 2007 presented industry with a number of challenges in transporting the crop from farm to mill. One grower group is building on previous work (which developed an automatic tarping system for haulout units) by developing a levelling arm which levels the load in the bin, allowing the automatic tarping system to function effectively. The results of this research will be welcomed by local industry which relies on road transport and is required by law to cover their loads. (SRDC Project Code: **GGP011**)

especially in the implementation of a BMP self-assessment process, is also recognised as having assisted the Mossman Agricultural Service in their eco-acreditation process. (SRDC Project Code: **MAS001**)

In the Herbert, organisations are working together to increase industry profitability by optimising season length and exploiting geographical variation in CCS and climatic conditions.

The project is a united effort between CSR Sugar, BSES Ltd, Herbert Productivity Services Limited, Canegrowers Herbert, Mackay Sugar, and Syngenta Crop Protection to assess the benefits of MODDUS, a new chemical crop ripener from Syngenta Crop Protection. MODDUS has the potential to improve the profitability of the Australian sugarcane industry by enhancing sugar content and providing greater harvesting flexibility.

Four years of extensive research and more that 100 trials in Australia (many of them conducted under this project) have shown that MODDUS can increase CCS (average increase of 0.7 in the Herbert, 0.46 in Mackay, and 0.87 in the Burdekin). However, the degree of response of the sugarcane crop can vary. Research directed at understanding this variation has shown that there are many interdependent agronomic factors involved.

To understand the interdependent factors and to ascertain the harvesting season flexibility and the general benefit of the technology to the industry, a large scale pilot program was established in the Herbert.

The pilot program included 46 farming businesses with 470 hectares treated with MODDUS. The analysis shows an average increase of 0.7 CCS and an average increase of 0.55 tonnes per hectare in the sugar yield. Other observations suggest that the treated crops survive better in drought and allow better water and nutrient intake. (SRDC Project Code: **BSS264**)

Integration of harvest and transport systems a win-win

An SRDC-funded project in the Herbert is focused on enhancing efficiency and integration from field to factory. Recognising the potential savings across the local value-chain that changes in the harvesting and transport sectors can produce, researchers and industry have been working together to implement changes to achieve the economic and social goals of each of the participants in the growing, harvesting and milling sectors.

> ‘Recognising the potential savings across the local value-chain that changes in the harvesting and transport sectors can produce, researchers and industry have been working together to implement changes to achieve the economic and social goals of each of the participants in the growing, harvesting and milling sectors.’

2006–07 marked the first year of this project, which will facilitate change that promotes adoption of whole-of-systems solutions in harvesting and transport reform and enhances revenue and cost efficiency at the harvesting and transport interface of the value chain. Harvester operators have been working together to discuss harvesting and transport infrastructure modifications. The team will assess the viability of incorporating additional tools (including web based tools, GPS monitoring and other planning tools) to improve performance harvesting and transport. (SRDC Project Code: **CGH002**)

The NSW sugar industry is moving towards utilising the whole-of-cane crop for electricity generation and sugar. This move will require marked changes to the farming system, harvesting transport and mill operations. Sectors of the New South Wales sugar industry value chain are working together on a project to implement an integrated sugar system.

Following an exhaustive process of investigation into GPS products and their suitability for the sugar industry, a GPS system was installed in NSW in 2006. GPS base stations and auto-steer units are now operational. Zero-till planting has been investigated throughout this farming system project. These trials aim to put a dollar figure on the advantages of fallowing paddocks with a legume crop, the benefits of reduced tillage planting and comparing cane planted on mounds and on a flat profile. Trials were set up at the three NSW mill areas and have demonstrated significant opportunities for reduced input planting systems. (SRDC Project Code: **NSC005**)

Harvest planning in the Tully district is a complex issue influenced by large harvesting groups, high mill crushing rates, and a wet tropical environment. The traditional harvest season is between mid June and November. While this is the dry season, there is a high probability of significant rainfall disrupting the harvest.

An SRDC-funded project is developing and implementing harvest management planning tools for the maximisation of CCS in the Tully district.

The project team hopes to simplify the complex decision making process behind harvest management decisions. In the first year of this project researchers have worked with growers in the pilot group to adapt tools so that they provide the information in a manner that growers can use to improve their harvest planning processes. Using the SugarMax and VarietyMax tools, growers and their advisors can view information including CCS trends, block details and harvester round rotations. They can also easily calculate the tonnes and CCS of each variety. (SRDC Project Code: **CGT001**)

An SRDC-funded project is implementing integrated harvesting-transport-milling logistics through adoption of optimised road transport scheduling in Maryborough. The project seeks to provide an integrated harvesting, transport and logistics planning tool for the region. In the first year of the project, the project team focussed on collecting information to suggest scenarios for potential improvements. Some of these improvements will be tested in the 2007 season. The research team have also modularised transport models previously developed so that they can be integrated with the Maryborough Sugar Factory's systems. (SRDC Project Code: **MSF002**).

SRDC R&D investments are helping the harvesting, transport and milling sectors capitalise on opportunities to improve their performance and productivity.

New thinking about harvesting and transport spells big savings down south

The New South Wales sugarcane industry has taken a huge bite out of their input costs, reducing the costs of their cane supply operations by a whopping 32 per cent in just four years thanks to a project which has developed a harvest management system.

The project team working on the SRDC-funded project includes researchers and staff from CSIRO, Harvesting Solutions and the New South Wales Sugar Milling Cooperative.

The team says that the system, which has been in place in NSWSMC's three mill areas for the 2005 and 2006 seasons, has great potential to make an even more dramatic difference.

NSWSMC Agricultural Services Manager, Rick Beattie, said that in the first step of the project they worked with Agtrix Harvest Management Solutions to develop a software solution known as CHOMP (Centralised Harvest Operations Management Program) to fit their needs.

"CHOMP provided us with a system to automate harvest process recording, provide an improved basis for harvesting charges, develop performance indicators for harvest management and provide high quality farm productivity data," Rick said.

CHOMP interacts with hardware (including data loggers) installed on harvesters, and another software program called FRANK, to record what the harvester does in each location; processes these data to maintain harvest records and productivity data, and develops harvester performance reports which can be distributed back to harvester operators.

The data are translated into things like maps of productivity and tools to demonstrate consignment accuracy.

"Like everyone else, we realised several years ago that we needed to reduce our input costs right along the chain if we wanted to remain competitive," he said.

The development of the software was only one element of the project; the team has been working with others to demonstrate the benefits to industry of adopting optimised harvesting and transport arrangements to achieve even more savings.

Andrew Tickle from Richmond River CANEGROWERS, who has been working on an SRDC Harvester Group Innovation Project, said their long-term goal is to reduce the costs of harvesting by $1/tonne by establishing a million-tonne harvesting cooperative.

"Having one large harvesting cooperative will enable cane harvesters to work together in set schedules and enable greater co-ordination of harvesting in the area," Andrew said.

"There are already a number of harvesting cooperatives in the area, so it will be a long-term process of working out a win-win situation for each.

"While we haven't yet been able to achieve the outcome we had hoped for, we've been able to do some excellent groundwork which I'm sure we'll be able to build upon in the future.

"We've been lucky throughout this project to have been in contact with other harvesting enterprises in Queensland who have been open to sharing their experiences," Andrew said.

The benefits of these two projects are expected to become apparent over coming years.

"In five to ten years time I'm sure we'll be using information available through automated systems to help all sectors of the value chain be better attuned with each other. This will help industry get the most out of its harvesting, transport and milling capital," Rick said. (SRDC Project Code: **NSC006**, **HGP001**)

Cooperative Research Centre for Sugar Industry Innovation through Biotechnology 2006–07 in review

The Cooperative Research Centre for Sugar Industry Innovation through Biotechnology (CRC SIIB) has made good progress in the first year of its second phase. Our new portfolio of projects is now underway, with work organised under the four programs: Enhanced sugarcane farming systems; New product development from sugarcane; Education; and Technology Transfer. These are designed to further our ultimate goal, which is to create opportunities that add significant commercial value to the Australian sugar industry.

Our recent external review resulted in some constructive criticism. The CRC Board and staff have taken on board a number of recommendations to improve the effectiveness and focus of the CRC.

An outstanding achievement during 2006–07 has been the inclusion of Metabolix Inc. as a new supporting participant to the CRC. Metabolix currently produces natural plastic from renewable, biodegradable resources, such as corn, providing a renewable alternative to petroleum-based plastics. Our partnership with Metabolix means a greater investment into research into biopolymers in sugarcane. This could possibly open another market for the Australian sugar industry, and a potentially lucrative one at that. The value of plastic products is over US$60 billion a year in the US alone. Metabolix provides the big-business "pull" we need to further the development of bioplastics in the sugar industry.

Our CRC's research is continually driven by the competitive world environment in which the Australian cane growing industry operates. In 2006–07, there was rapid global investment in the production of biofuels from a range of feedstocks. In particular, there has been a massive growth in biofuel investment in the USA, and increasing support for an expanded biofuels industry in Australia.

We have maintained a watching brief on world developments and on the potential research opportunities these create. In Brazil, already the world's biggest biofuel producer, a recently-reported (February 2007) study conducted by the University of Campinas for the Ministry of Science and Technology showed that Brazil could lift annual exports of sugarcane-derived ethanol to 200 billion litres during the next 20 years — sufficient to replace 10 per cent of the world's current petrol demand.

The technical and commercial interest in the conversion of cellulose to ethanol through either fermentation or catalytic conversion continues to expand and with it the interest in biomass. Sugarcane and its close relatives are attracting considerable attention in some commercial sectors because of its production of biomass and the existing infrastructure associated with its production.

During the year, the third CRC SIIB Research Symposium brought together in excess of 100 of the CRC's researchers across all participant groups to hear the latest CRC SIIB research and development outcomes. As in previous years, student presentations were of a very high calibre and reinforced the position of students in our research projects. The forum provided research staff who attended with an opportunity to gain a clearer understanding of the current position of the Australian sugar industry and issues that challenge its future prosperity.

Provision of higher degree opportunities for students remains one of the key areas of activity for our CRC. With six students completing their postgraduate training, 29 others enrolled, and two new PhD students to commence later in 2007, the CRC is well on its way to achieving its postgraduate target by June 2010.

In 2007, a new CRC SIIB project aiming to determine how to effectively teach and assess biotechnology at schools commenced. The project will also assess how to effectively transfer knowledge through school/parent and community links and identify strategies that promote effective collaboration between schools and scientists.

During 2006–07 the CRC has successfully commenced the processes of commercialising patented technologies and has initiated patent positions on a number of other outputs of the CRC project investments. Whilst each of these brings only minor returns to the CRC IP Company, they are significant outcomes for the CRC and the staff involved.

The R&D portfolio for the second half of the CRC sees a continuing focus on the development of deliverables in keeping with the targets and goals of the CRC. Several of our 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.

Key Outcomes 5 and 6 — *Enhancing human capacity and partnerships and establishing an effective R&D capability*

5 — Enhancement of human capacity and partnerships between industry, research and regional communities to underpin change, learning and innovation

6 — An effective R&D capability underpinning industry futures

NRP — Using frontier technologies; Promoting and maintaining good health

RRP — Creating an innovative culture; Use of frontier technologies

Program D (Industry Capacity) of the SRDC R&D Plan 2003–2008 is specifically devoted to building the human capacity for change, learning and innovation in the sugar industry and significantly contributes to achieving Key Outcome 5.

Throughout 2006–07, SRDC has been committed to fostering and developing partnerships with industry and researchers.

Grower Group Innovation Projects and Travel and Learning Opportunity Projects continue to deliver a substantial return on investment and are helping to create an innovative culture within industry. Both of these project types represent a small portion of the total SRDC investment portfolio, but their ability to translate research findings to on-the-ground results is greatly improving adoption rates and creating strong linkages between the industry and researchers.

Through the Industry Capacity Program, SRDC promotes more effective coordination of R&D activities across industry and R&D partners, to enhance the performance of the R&D system through evaluation, review and feedback.

Through Key Outcome 6, SRDC is facilitating enhanced skills in R&D personnel.

Building leadership and management capacity

The 2007 *Impact on Sugar* Industry Training Program, supported by SRDC and delivered by Leading Industries, was designed specifically for the sugar industry with a focus on supporting and building the skills of industry nominated members who have the potential to become involved in industry decision making. In 2006–07, two training programs were conducted and concluded with 25 participants presenting their industry related projects in Mackay and Cairns. The participants presented the outcomes of these projects to industry, business and community leaders.

The industry projects completed by participants have made a significant contribution to the industry and included workshops conducted on value-adding opportunities; smut management; water management; study tours undertaken to other regions to learn about new, innovative farming systems which are achieving higher levels of productivity; women's groups formed to ensure support and education; school programs conducted to both educate children and promote the industry; and research into the viability of small farms converting to sustainable farming systems.

Thanks to this project, participants now have a greater voice within industry after two participants of this program were successful in being elected to their local CANEGROWERS boards. (SRDC Project Code: **LDI001**)

Making an impact on sugar — industry participants undertook training to develop skills as part of the Impact on Sugar program.

> Thanks to this project, participants now have a greater voice within industry.

Established in 2005–06, the second year of the Generation Next initiative sought to build the capability and confidence of the next generation of sugar industry stakeholders.

The 2007 Forum had a positive impact on industry, with over 70 young industry stakeholders from a wide range of sectors including, production, milling, research, extension, marketing and agri-politics attending.

Approximately 40 industry and political leaders attended the Forum to meet with the delegates, and hear their perspective on industry initiatives and opportunities. Industry and political leaders also presented information, insights and knowledge on a range of relevant issues to the next generation of industry leaders.

The Forum provided strategic opportunities for delegates to form regional Generation Next Groups in order to progress issues, further develop skills and knowledge and form partnerships with the existing industry leadership. Seven regional groups were formed during the Forum and they have developed regional plans to progress the Generation Next objectives. The challenge for this initiative now is to ensure the momentum is maintained and the next generation of industry members and leaders is supported as they continue

Young sugar industry participants rub shoulders with Minister for Trade, the Hon. Warren Truss (centre) at the 2007 Generation Next Forum.

to develop their skills, knowledge and networks, together with a whole of industry perspective. (SRDC Project Code: **LDI002**)

SRDC also contributed towards several initiatives in partnership with the Department of Agriculture, Fisheries and Forestry and other rural research and development corporations, including the *Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry;* and the *Cooperative Venture for Capacity Building*.

> ‘The challenge for this initiative now is to ensure the momentum is maintained and the next generation of industry members and leaders is supported as they continue to develop their skills, knowledge and networks, together with a whole of industry perspective.’

One pass system eases the burden for sugar growers

(2006 DAFF Science and Innovation Awards for Young People in Agriculture)

The Department of Agriculture, Fisheries and Forestry’s Science and Innovation Awards for Young People are designed to encourage young Australians to undertake groundbreaking research that will help boost the competitiveness of Australia’s rural industries.

Mark Cram won the 2006 SRDC sponsored DAFF Science and Innovation Award for Young People to investigate the development of a way of planting soybeans at the same time as harvesting cane, which could result in significant labour and fuel savings.

Mr Cram’s project involves modification of a sugarcane harvester to enable it to plant soybean seed and cover it with a small layer of soil at the same time as the harvester is removing the sugarcane crop.

The one-pass system offers the Australian sugar industry a low cost, efficient method of planting a break or companion crop, and improves soil health by reducing cultivation and ground traffic.

Mark Cram Winner in the 2006 DAFF Science and Innovation Awards for Young People in Agriculture is modifying a sugarcane harvester to enable it to plant soybean seed and cover it with a small layer of soil at the same time as the harvester is removing the sugarcane crop.

Enhancing an industry culture of continuous improvement

The SRDC-funded ‘Cultural Imprint Project’ is a joint venture between CSR Sugar, Herbert CANEGROWERS, BSES and the Australian Mechanical Cane Harvesters Association. The project generated a cultural imprint (a collection of stories that describe the way a community works or doesn’t work together) which targets a new level of understanding, that offers the opportunity to break the deadlocks encountered as a result of shared history, and unlock a new future for the Herbert industry.

In 2006–07, the project worked towards the generation of a series of practical facilitation tools for the region to use that will improve the likelihood of issue resolution and improve the effectiveness of how the value chain works together.

These facilitation tools will be used on two showcase pilot projects — siding rationalisation and harvester rosters. (SRDC Project Code: **CSR030**)

SRDC has invested in the CVCB (Cooperative Venture for Capacity Building), a joint venture aimed at ensuring an effective system for continuous capacity building in primary industries in Australia. The initiative has contributed to understanding the concept of capacity building and has documented factors which influence learning and the changing nature of rural landholders.

Fast Track, a project funded through the joint venture, aims to test CVCB findings. The project brought together key capacity building project managers and practitioners to enhance their capacity to choose, design, support and evaluate their capacity building efforts.

Sugar industry participants who attended the first workshop in early 2007 have been mentored by some of the most highly respected rural extension and capacity building practitioners in Australia. Through this mentoring opportunity, participants have been able to improve engagement strategies with stakeholders, design appropriate delivery options or develop their evaluation skills. These opportunities will make an impact on the effectiveness of engagement activities across the industry. (SRDC Project Code: **DHC001**)

Supporting the industry's women

Recognising 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.

One project which is seeking to increase participation of women as active members and leaders within the CANEGROWERS organisation was successful in supporting a number of women who stood for election to their regional boards — four were successful in gaining positions. Sixteen women completed a leadership workshop and four regional companies of CANEGROWERS have committed to working to increase the participation of women, particularly in leadership roles.

Another outcome of the project is the creation of strong, effective networks and links between the women participating in the leadership workshop, CANEGROWERS, government departments and other players in the sugar industry. (SRDC Project Code: **CMC001**)

‘One project which is seeking to increase participation of women as active members and leaders within the CANEGROWERS organisation was successful in supporting a number of women who stood for election to their regional boards — four were successful in gaining positions.’

A CSIRO and University of Queensland research team is collaborating with local people in far north and southern Queensland to study the participation of women in the sugar industry. The results of this study will be used to identify practical ways to encourage and strengthen women's roles in ensuring the economic, social and environmental sustainability of the sugar industry.

So far, the researchers have met with local people from industry, extension, government and community sectors in far north

From farm to world market — FNQ sugar women get the scoop

Not prepared to be the silent business partner, the women of the sugar industry in Babinda, Innisfail and Mareeba are now better equipped with an understanding of how the business side of the industry works.

Their new found knowledge comes thanks to a series of three one-day workshops which sought to raise the level of understanding of around 60 female farm business partners about cane payment, marketing and pricing issues, and create greater interaction between male and female partners within farm businesses.

Mick Ward, Cane Production Superintendent with Bundaberg Sugar, said that the workshops were a great success, generating open and frank discussion, and giving participants an opportunity to ask those questions they may have been too afraid to ask previously.

"Presenters from Bundaberg Sugar, Queensland Sugar, SRDC, CANEGROWERS, and BSES Limited, presented on everything from the basics of sugarcane production to cane supply logistics, the marketing and pricing of raw sugar and everything in between," Mick said.

Queensland and southern Queensland to discuss the project objectives. They have received valuable feedback and advice on the direction of the study and identified a wide variety of issues and opportunities relevant to women's participation in each region. A major outcome of this phase of the project is the establishment of an organising committee, which has developed an email network to improve communication among women in the sugar industry.

A later stage of the project will involve working with local collaborators to identify existing sugar industry activities that could benefit from greater engagement of women, and then trialling new strategies to enhance women's participation in those activities. (SRDC Project Code: **CSE016**)

Another SRDC-funded project is focussed on building the capacity of women across the sugarcane industry value chain in the Herbert and Burdekin regions. This project is enhancing participants' human (skills in leadership, communication, self confidence and negotiation) and social capital (skills including networking, mentoring, supporting existing groups and working with influence).

A highlight in 2006–07 was the 'Here come the women' innovation showcase day which showcased the achievements of three sugar industry women to more than 170 participants.

Through this project, women have been supported to take advantage of different training initiatives including the Australian Institute of Company Director's Essentials Course and the 2007 Generation Next Forum. This project is helping women take a more active role in their regions. (SRDC Project Code: **CGH001**)

Here come the women! Tracey Curro (far left) interviews three successful sugarcane industry innovators.

"We were keen to meet with those people who are really at the frontline of the business, especially the business finances," he said.

Jacqui Sacilotto, whose family owns a cane farm in Kennedy, said that the workshop left her feeling empowered with the knowledge she gained. She said she felt as though she was now in a good position to make a greater contribution in other areas of farm management, besides the business areas.

"I realised that we aren't *just* cane farmers, we are actually part of a larger value chain that provides a world-class product," Jacqui said.

"I now have a better understanding of how we sell our sugar to other countries and how sugar research and development is carried out. I also learnt how the mill operates and how to interpret the mill's paperwork. I even got to hear about the basics of growing cane!

"There were heaps of questions that had been on my mind for a long time which have finally been answered," she said.

The workshop was funded through an SRDC Travel and Learning Opportunity Project.

Fostering targeted continuing education

An external review of SRDC's investments in scholarships over the last 17 years has shown that the sugarcane industry has benefited from the investment.

Over the life of the program, scholarship topics have covered pests and diseases; farming systems; environmental and natural resource management; harvesting and transport; and social science. Over recent years, the numbers of projects have been spread more evenly across these disciplines.

The review found that there were significant spill-over benefits from SRDC's scholarship program. The majority of former scholarship holders continued their careers in science, and many of these chose to remain within the Australian sugarcane industry.

The review also found that the SRDC Scholarship program's completion rates of 82 to 91 per cent are high in comparison with 65 per cent found in a study of 34 Australian institutions. (SRDC Project Code: **SRD014**)

The following students were enrolled in PhD and Masters programs in 2006–07:

- Hu Fengdou — Improved selection systems and data analysis for sugarcane breeding
- Kimberly Ritter — An investigation of the genetic, biochemical and molecular basis of sugar accumulation in sugarcane
- 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
- Matthew James — Integrating the harvest, transport and milling value chain by implementing a novel data infrastructure and decision support system
- 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
- Jane Churchill — Rapid screening tools for smut reaction in sugarcane varieties
- 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

Kylie Anderson — Invasion potential of Eumetopina flavipes, vector of Ramu Stunt disease of sugarcane

Kylie Anderson is in the midst of developing a model that aims to allow researchers to predict incursion potential for exotic pests and diseases in the Torres Strait and on Cape York Peninsula. The Island Sugarcane Planthopper, *Eumetopina flavipes*, is a small bug which carries the devastating Ramu Stunt disease of sugarcane in Papua New Guinea. Disease free populations of the planthopper occur on most Torres Strait islands and in small isolated patches on the tip of Cape York. It is these populations that may hold the key to understanding how exotic organisms move into Australia through the Torres Strait, which is a well recognised invasion pathway. Ms Anderson has been studying how the Island Sugarcane Planthopper disperses among Torres Strait islands by combining the results of DNA analysis and field trials with a variety of potential dispersal theories. Project results will be available to the Government agencies which conduct early warning surveillance, and their application of the model may lead to faster or more appropriate response actions.

Kylie Anderson focuses on developing a model to predict the incursion potential for exotic pests and diseases.

Kimberley Ritter — An investigation of the genetic, biochemical and molecular basis of sugar accumulation in sugarcane

Obtaining higher sugar yield is a major focus of sugarcane variety improvement programs; however, the complex genome of sugarcane has hindered research and development of the crop.

Sorghum and sugarcane are both members of the Andropogoneae tribe and comparative mapping has revealed a high level of synteny among the two closely related species. Sorghum is a diploid species with a small genome, unlike sugarcane, which has one of the most complex genomes of any organism. Particular varieties of sorghum, known as sweet sorghums or sorgos, accumulate high levels of sugar in stalk juice near the time of maturity, as does sugarcane. Based on this relationship between sorghum and sugarcane, Ms Ritter's study aimed to investigate sweet sorghum as a genetic and physiological model for sugar accumulation in sugarcane.

From a genetic perspective, similar loci for sugar-related traits were detected between sweet sorghum and sugarcane, thus indicating that sweet sorghum is likely to be a good genetic model for sugar accumulation in sugarcane. However, the diversity study suggested that the high stem sugar in sweet sorghum occurred independently or was independently selected in several different genetic backgrounds, which is in contrast to the possible monophyletic origin of high stem sugar in sugarcane. From a physiological perspective, the sucrose levels increased toward the base of the stem in sweet sorghum and accounted for 90 per cent of the soluble solids at the end of the crop cycle, in the same manner of accumulation seen in sugarcane, suggesting that sweet sorghum could be a physiological model for sugarcane.

Improving health and safety

The Sustainable Farm Families (SFF) Program conducted as part of the Farm Health and Safety Joint Research Venture reported some excellent results from its second year in 2006–07.

The SFF Program took participants from the Burdekin and Herbert regions through an intensive health evaluation, education and training process and identified potential risks to health and wellbeing.

The program is based on assisting sugar farmers and their families to identify strategies to enhance individual and family health, and participants said that the information was easy to follow and was put in everyday language, not medical terms. After completing the first stage of the program in 2005–06, participants returned in the second stage to see what improvements had been made in their health.

Getting the low-down on the real content of food — participants in the Sustainable Farm Families Program learn more about what is in the food they eat.

The results were pleasing — 80 per cent of Burdekin participants reported that they had changed their diets to healthier choices. The same percentage of participants reported that their blood-sugar levels had dropped.

In the Herbert, 75 per cent of participants responded that they had changed their diet to healthier options. (SRDC Project Code: **OHS002**)

A Travel and Learning Opportunity Project undertaken in 2007 helped to increase growers' awareness and knowledge of workplace health and safety (WHS) in response to recent changes in legislation and community expectations.

Issues covered in the workshops, which were conducted in three cane producing areas and attracted close to 100 industry members, included designing and recording safe systems of work, safe operation at cane delivery points, overhead powerline safety, safe operation of all-terrain vehicles and dealing with fatigue management.

The workshops also helped strengthen relationships between sugar industry service organisations (CANEGROWERS, BSES and Productivity Services) and government agencies and associated organisations involved in upholding and policing workplace health and safety regulations, including WHS Queensland (WHSQLD), Electrical Safety Office (ESO), FarmSafe Queensland, Queensland Transport (QT) and Ergon Energy. (SRDC Project Code: **CMY001**)

Travel and Learning Opportunity Projects real eye openers

The success of SRDC's Travel and Learning Opportunity Projects in encouraging the adoption of change and in enhancing partnerships between industry, researchers and the community continued throughout 2006–07.

In 2006–07, over 300 people representing all areas of the Australian sugarcane industry value chain took advantage of the opportunity to attend conferences, study tours, conduct workshops and seminars, invite speakers or facilitators for industry functions and many other activities to develop sugarcane industry people.

An external review of SRDC's investment in TLOPs since 2002–03 found that the program was successful in expanding participants' horizons, by exposing them to new ideas or ways of thinking. The report also found that they are valued as a way of providing a first hand experience. Some have led to changes in farming practice, while others have led to changes in the way people think, interact and plan. Another finding of the review was that the program's flexibility allows people and groups to investigate issues that are important to them in a timely manner.

Networks were also strengthened, with approximately one third of all TLOPs involving more than one sector of the industry as direct participants.

Some examples of successful TLOPs (not mentioned elsewhere in this report) conducted throughout 2006–07 include:

- One project aimed at building a more effective capability in Australian sugar-industry R&D organisations by improving general corporate governance, relationships with funding providers, scientific standards, development of collaborative linkages, and management of education and extension activities. Manager of BSES QCrops division, Dr Peter Allsopp, conducted a month placement with the executive team at Rothamsted Research Limited and the Scottish Agricultural College. (SRDC Project Code: **BSS299**)

- By investigating options for share farming, the outcomes of one project will contribute to an increase in the number of viable farms and make the transition to retirement easier while removing the need to sell the farm. The project has produced a spreadsheet allowing extension staff to compare different share farming arrangements using a clients' actual costs and returns. (SRDC Project Code: **BSS298**)
- Jennie Lane, a final year photography student majoring in Photojournalism from Griffith University, Queensland College of Art, documented the lives and stories of Queensland sugarcane farmers through a TLOP which sought to raise the profile of the sugarcane industry, impacting positively on the motivation of canefarmers and giving them an increased sense of pride. (SRDC Project Code: **CG019**)
- The need to develop a cohesive industry approach to understanding and managing sugarcane smut disease in the Isis, Bundaberg and Maryborough region was the catalyst for a group of 30 growers, technical staff and others to travel to the Ord River sugar industry in April 2007. (SRDC Project Code: **CIS001**)
- By taking the opportunity to observe the success of alternative cane and non-cane farming systems in Mackay, Sarina, Emerald and Dysart and enhance the uptake of controlled traffic, reduced tillage and legume break crops, members of the Kalamia Cane Growers Young Farmers Group have achieved great results in the uptake of elements of the new farming system. Nine out of the 12 tour participants have converted to double disc open planters and permanent bed system. (SRDC Project Code: **CKA001**)
- CSIRO Sustainable Ecosystem's Dr Peter Thorburn sought to improve understanding of nitrogen management controls in the EU and USA as part of a TLOP undertaken in 2006–07. This project provided a good understanding on the potential impact of water quality regulations on agriculture. (SRDC Project Code: **CSE015**)

Grower Groups continue to take research to the farm

2006–07 marked the second year of the SRDC-funded Grower Group Innovation Projects, which continued to help growers take science from the laboratory to the paddock.

Through these projects, groups of innovative growers are working with researchers to try new things and are seeing results; not only in their on-farm operations, but also in the way they embrace change.

These projects have had a dramatic impact on the adoption of new farming systems principles and are allowing growers to apply these recommendations to their own farming enterprise.

These growers are spreading the word at the grass roots level, and many in the local area are keen to try the improved practices demonstrated through these projects.

SRDC supported growers to design and implement trials in collaboration with sugar industry researchers and advisors, and to report on the findings of their projects to others across sugar regions. Two grower-focussed workshops were conducted in 2006–07 to develop participants' skills and knowledge and facilitate linkages between growers involved in innovation projects from across Queensland and northern New South Wales.

Examples of successful GGIPs have been mentioned throughout this report.

‘These projects have had a dramatic impact on the adoption of new farming systems principles and are allowing growers to apply these recommendations to their own farming enterprise.’

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 Cairns as part of the 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 is a vehicle that allows SRDC to reinforce its efforts in encouraging industry, researchers and other stakeholders to collaborate and embrace advances in science, technology and engineering 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

The Sugar Yield Decline Joint Venture team took out the Award’s top honour — the SRDC Innovation Award.

This team of experienced and passionate researchers has been working with industry for more than a decade to improve industry productivity and sustainability. Their research has provided a sound basis for a sugarcane production system for the future, one which ensures sustainable sugarcane production. Importantly, the system can be adapted to suit all regions because it encompasses a set of principles rather than a specific recipe.

Making a positive impact on the sugarcane production system of the future — the Sugar Yield Decline Joint Venture team was named 2007 winner of the SRDC Innovation Award.

SRDC Service Award

The SRDC Service Award, which recognises the work of an individual in advancing innovative research or development within the industry, was won by Judy Plath who is encouraging growers in the Isis and Maryborough regions to adopt the principles of this new farming system.

Through her work, Ms Plath has facilitated the planting, growing and harvesting of over 2,000 hectares of soybeans as a break crop in the Isis region over the last three years. Impressively, almost 70 percent of the 2005–06 soybean crop was of high value food grade quality and returned over $630,000 in additional revenue for the district’s cane growers.

SRDC Service Award winner Judy Plath is recognised for her innovative thinking in encouraging growers in the Isis and Maryborough regions. Judy is pictured with SRDC Deputy Chair Andrew Barfield (left) and Chair Bob Granger.

SRDC R&D Award

Joint winners in the SRDC R&D Award, Barry Croft and Phillip Jackson were recognised for their contribution to the sugarcane breeding system.

Barry Croft, program leader for biosecurity and crop protection with BSES Limited, is one of the industry's leading plant pathologists and a world authority on the management of sugarcane diseases.

His work has been instrumental in the response to and management of the sugarcane smut outbreak on the eastern seaboard in 2006.

Phillip Jackson is also highly regarded for his work with CSIRO Plant Industry. Dr Jackson's ideas are leading a shift to more efficient and shorter cycle selection systems which will have significant outcomes for the time it takes to release new varieties, which is great news for the industry.

SRDC Excellence in Regional Innovation Award

- *Burdekin — MAFIA group*
  The MAFIA group has been instrumental in setting the scene in the Burdekin for greater collaboration and uptake of innovative management practices and recommendations. The group is keenly aware of its role in ensuring farming practices do not pose a threat to the long-term sustainability of their industry or region. They have taken on board practices such as water quality monitoring, fertiliser form and placement trials and trialling alternative irrigation practices.

SRDC R&D Award winners Phillip Jackson (left) and Barry Croft (right).

- *Herbert — Herbert Water Quality Monitoring Group*
  Better farm practice delivers better profitability whilst improving environmental outcomes, and the participants in the Herbert Water Quality Monitoring team are committed to excelling at both. Industry organisations are working together to empower growers to understand what impact their farm practices can have on the environment. One of the major success factors arising from this work is the increase in growers' knowledge of water quality and ecological impact of farm runoff. Almost 20 growers have been involved in the project, and the water quality at 11 catchments has been sampled.

- *NSW — NSW Farming Systems Group*
  The common goal of the New South Wales Farming Systems Group has always been to improve the viability of the local industry and they have championed the concept of zero-tillage cane planting in NSW, successfully pioneering the concept for local application. The group has 17 member growers across the three mill areas of the New South Wales Sugar Milling Cooperative at Harwood, Broadwater and Condong. The efforts of the group have increased awareness of zero-tillage farming methods and given all NSW growers a chance to assess the application of the system to local conditions.

- *Central — Homebush Innovative Farmers*
  This group's work will help local industry save money and time while improving their sustainability. The Homebush Innovative Farmers, a group of six farmers from the Homebush area, south of Mackay, have closely followed the Sugar Yield Decline Joint Venture recommendations for a new farming system, which includes controlled traffic, minimum or zero tillage and break cropping, and for the last six years have been growing commercially harvested soybean and mungbean.

- *Southern — Isis Target 100*
  Isis Target 100 is a holistic productivity plan focused on building on-farm sustainability, profitability and viability through the adoption of improved farming practices that will result in an average mill region production of 100 tonnes of cane per hectare or better.

  It is about creating a fresh grower philosophy in the region and equipping growers with business management skills that will ultimately build their confidence, ensure secure cane supply, create a strong and diverse economic base and allow growers to see themselves as both farmers and. business people. Ultimately, Isis Target 100 is about 'building business people who farm'.

Corporate Performance Indicators

The SRDC Annual Operational Plan 2006–07 outlines three performance indicators and associated measures to assess SRDC's effectiveness in achieving its Outcome. Table 4.4 outlines how SRDC met the performance indicators and measures outlined in its AOP 2006–07.

Table 4.4 SRDC Corporate Performance Indicators

SRDC Performance Indicators and Measures	Key Achievements
Indicator: Economic returns from SRDC investments	
Investment analyses of completed R&D projects demonstrate a benefit: cost ratio greater than 5:1	1. SRDC commissioned Brisbane based company Agtrans Research to undertake an analysis of six recently completed projects, which were sourced from across the four SRDC Programs. The aggregate benefit cost ratio was well above the targeted figure, at 8.4:1, assuming a 5% discount rate and a sugar price of $285 per tonne. The six projects included in the analysis were **SRI097**, **MSA003**, **BSS261**, **CSE001**, **CTA028**, **YDV001/002**. 2. Analyses of two RDC Joint Ventures were conducted in 2006–07. *The Managing Climate Variability Program (MCVP)* in its fourth phase produced a cost benefit ratio of 1.7:1 and internal rate of return (IRR) of 10.6% (at a 6% discount rate). Nevertheless, the total investment in the four phases of investment of the joint venture produced a cost benefit ratio of 4.74:1 and an IRR of 28.2% (at a discount rate of 6%). 3. *The Farm Health and Safety Research Joint Venture* in the evaluation of its first phase completed cost-benefit analyses on three case studies of groups of projects. These three analyses covered five of the projects funded and covered the national farm and machinery safety program and review, effective safe play area fencing options for rural properties, and the national farm injury data collection. The potential returns of these three investments were substantial, with cost benefit ratios of 13:1; 55.5:1 and 2.5:1 respectively, and IRRs of 34.5, 178 and 14.8.
Adoption rates benchmarked for at least three technologies per year	1. Benchmarking harvest group practices in the Burdekin (**CSR033**) Data loggers linked to GPS have been installed into harvesters belonging to the seven harvesting groups. These data loggers track the location of harvesters and provide data on elevator operation, primary extractor fan operation, fuel use and feed train chopper pressures. The information is sent to a central database where the information is processed using the Agtrix CHOMP program and a custom-built benchmarking program that develops harvesting reports. The project has benefited from the associated benefits of the technology being able to record data to develop yield maps and to generate benchmarking reports, which creates a win–win situation for farmers and harvesters by receiving valuable information to assist them to better manage their businesses.

	2. Moving from case studies to whole of industry: Implementing methods for wider industry adoption (**CSE009**) Growers, extension officers and mill staff from Tully, Bundaberg, New South Wales and Plane Creek have participated in activities to increase understanding on the adoption of complex technologies such as climate forecasting tools, irrigation management tools, and decision support systems to improve nutrient management. A general adoption strategy was tailored to suit the local context and the specific technology. The outcomes of the project show that adoption and understanding of technologies is not a simple task and requires capacity building by industry end users and by scientists as part of the action learning cycle. 3. Travel and Learning Opportunity Projects to evaluate harvester automation and precision farming. (**CSR039** and **CSR040**) Representatives from the Cuban company Tech Agro conducted automation trials for their automatic base cutter equipment in the Herbert, Mackay and Burdekin districts. During field testing, growers and harvesters attended field demonstrations. The results were promising and have resulted in orders from harvesters in the regions for the equipment. As a consequence, an Australian delegation travelled to Brazil and Cuba to review and observe the technology in operation. A whole of systems approach was adopted when reviewing the potential of this technology to lead to precision farming and harvesting into the future. 4. Improved sugarcane farming systems (**BSS286**) There is rapid uptake of the improved farming system across the sugar industry — the area planted to sugarcane using controlled traffic in 2007 was 25,500 ha (cf. 9,200 ha in 2003); minimum tillage planting, including zonal tillage was on 18,300 ha in 2007 (cf. 6,429 ha in 2003); and legume break crops were grown on 8,300 ha in 2007 (cf. 4,300 ha in 2003). 5. Enhancing an economic way of doing business in the cane industry (**DPI015**) Cane farmers in the Herbert district who have adopted the improved cane farming practices of controlled traffic, minimum tillage planting and legume break crops have increased their gross margins by about $22,000 per year, largely through a reduction in tractor operating time of 38% and a 20% reduction in weed control costs. 6. Improved clarification of sugarcane juice in factories (**SRI062** and **SRI095**) A total of 16 new generation clarifiers or upgrades to existing clarifiers have been installed in the Australian industry since 1998. Mills have implemented improved flocculants for reducing impurities in juice including calcium and magnesium compounds. 7. Application of molecular markers to sugarcane breeding (**CRC002**) Molecular markers are being used in the sugarcane breeding program to deliver more efficient selection for traits such as sugar content and disease resistance (including for sugarcane smut).

Indicator: Environmental returns from a better understanding of environmental management issues, and a reduction of adverse impacts on the industry's production environment and other ecosystems.	
Case studies demonstrate improved natural resource management and reduced environmental impacts in quantitative and/or qualitative terms.	1. Growers working together to improve water quality in the Herbert Sugar Industry (**CG013**) Cane farmers in the Herbert River district are actively monitoring nutrients, pesticide residues and turbidity caused by suspended sediment in the water leaving their farms. The effects of different farm management practices are being evaluated. Nitrate and pesticide levels have been generally low over the past year. 2. Tailoring the application rate of nitrogen fertiliser for specific soils and crop needs (**BSS268** and **CSE011**) The application rate of nitrogen fertiliser is being reduced as farmers recognise the ability of their specific soils to hold and supply nitrogen for crop production. The concept of applying nitrogen to replace the amount of this nutrient removed in the previous crop is being evaluated. 3. Improving irrigation practices (**CSE001** and **BSS297**) Researchers including Dr Geoff Inman-Bamber of CSIRO developed a web-based irrigation scheduling tool to help cane farmers minimise water usage while maximising sugar yields. The program WaterSense is being evaluated in the major sugar-growing regions that rely on irrigation. Trials in the Bundaberg and Burdekin regions showed that water use can be significantly reduced while maintaining or even increasing sugar yields. 4. Building grower capacity to understand and better manage groundwater (**BBF001**) Farmers in the Burdekin area who are experiencing rising groundwater that could adversely affect cane production are working with an expert to determine why the watertable is rising and to then change irrigation practices or irrigation infrastructure to prevent loss of productivity. 5. Increasing the efficiency of irrigation (**MAF002**) A Burdekin cane farmer, Chris Hesp, has installed a low-pressure lateral move irrigator to reduce the volume of irrigation water required to grow sugarcane and legume break crops, which will reduce run-off and contributions to rising groundwater compared to the standard practice of furrow irrigation. This irrigation system will also facilitate adoption of green-cane harvesting and retention of all harvest residues on the almost-flat fields in this region. SRDC and the Burdekin Dry Tropics NRM Board are co-investing to quantify the benefits of the improved irrigation practices. 6. More efficient application of mill mud to cane farms (**SRI134**, **QUT012** and **GGP015**) Mud produced as a by-product from sugarcane juice clarification is a useful soil ameliorant and fertiliser. Researchers in SRI@QUT have demonstrated new filter technology to produce drier filter cake that reduces the cost of transporting the mud from the mill to cane farms. A group of cane farmers led by Jeff Atkinson has developed a new spreading system to apply mill mud between the dual rows of cane in their improved cane farming system.

Indicator: Societal returns from investment in industry and public health and safety; human resource capacity and capability; and R&D with significant community benefits.	
Case studies demonstrating improved health and safety.	1. Sustainable Farm Families (RDC Joint Venture) 26 sugar industry people in two regions (Burdekin and Herbert) participated in the Sustainable Farm Families initiative. All participants were provided with information on the state of rural health, cardiovascular disease, cancer, farm health and safety, nutrition and diet, stress, women's and men's health, diabetes and physical activity. Participants are changing the way farming families view their health. The blood-sugar levels of 80% of Ayr participants dropped since the first course in the previous year, and 75% of Ingham participants changed their diet to healthier choices. 2. Improved train safety through improved locomotive braking performance (**QUT019**) Geoff Kent of SRI@QUT is working with CSR Invicta Mill people to quantify the improvement in braking efficiency of locomotives fitted with anti-skid braking systems (ABS). Stopping within shorter distances will improve safety for the public and loco drivers at rail crossings in particular.
Completion of at least two tertiary scholarships and two study tours or conference attendances by industry R&D personnel per year.	Dr Chris Brosnan completed his PhD thesis on expression modulating sequences for predicting transgenic silencing in genetically-engineered sugarcane. Kimberley Ritter has also completed her PhD thesis. This was an investigation of the genetic, biochemical and molecular basis of sugar accumulation in sugarcane. A review of 108 Travel and Learning Opportunity Projects funded over the last 5 years indicated that they involved over 1000 direct participants. In the last year 25 projects were funded through this program and more than 100 people benefited from training opportunities including study tours and conferences.
The number of producers involved in participative action research increasing each year	Twenty-seven Grower Group Innovation Projects have been funded by SRDC since 2005 in which grower-groups undertake on-farm evaluation of new technology and practices that are specific to their farming and harvesting circumstances. SRDC supports the growers to design and implement trials in collaboration with sugar industry researchers and advisors, and to report on the findings of their projects to others across the sugar regions.
The proportion of total SRDC funding that contributes benefits beyond the sugar industry exceeds 30%	SRDC invests in strategic R&D in areas such as genetics and breeding technologies, biotechnology, crop physiology, prevention of pest incursions, operations research, logistics and optimisation modelling, and modelling of factory operations that have potential benefits for the broad community through applications in other industries. SRDC also invests in projects focussed on providing benefits to the wider community through ensuring the sustainability of natural resources impacted by the industry, or through contributions to training and communication. In 2006–07, around 48% of all projects, representing over 50% of project funding, undertook R&D whose outputs will, if successful, contribute benefits beyond the sugar industry.
The number of SRDC projects contributing significant benefits to rural and regional communities	In 2006–07, SRDC invested in R&D whose outputs will, if successful, contribute benefits to rural and regional communities through regional planning and development, business development, improving regional ecosystems and providing ecosystem services, human capacity building and skill development, health and safety and amenity. In addition to these projects, many others are expected to provide direct economic benefits that flow on to rural regional communities through improved cash flow and profitability in the sugar industry.

Report of Corporate Operations

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 2003–2008* 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 it is tabled in Parliament.

SRDC issues a *Statement of Intent* in reply to a Statement of Expectations sent by the Parliamentary Secretary and which provides the Government's expectations regarding the purpose, direction and objectives of SRDC. SRDC's progress in delivering against the

elements included in the Corporation's Statement of Intent for 2007 are addressed throughout this Annual Report. These elements include:

- role (Section 2);
- adherence to Government policies (pages 23–24, Appendix A, Appendix B);
- performance reporting (pages 19 and 70);
- communication (pages 71 and 73); and
- accountability (page 71).

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 the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry. The Honourable Sussan Ley MP was the Parliamentary Secretary throughout 2006–07. The Parliamentary Secretary:

- 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 2006 meeting, the SRDC Board reviewed the relevance of the SRDC R&D Plan 2003–08 and advised the Minister of the outcome of that review. The Chair and Executive Director held formal consultations with the Hon. Sussan Ley on three occasions to provide direct reporting on significant issues and decisions including the industry outlook and SRDC's R&D portfolio.

In 2006–07, 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 (ACGC)
- Australian Cane Farmers Association Limited (ACFA)
- Australian Sugar Milling Council Proprietary Limited (ASMC)

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 2006–07. No payments were made to the Representative Bodies for these or any other consultations or purpose in 2006–07.

The major issues discussed at the meetings with the Representative Bodies included the ongoing relevance of the SRDC R&D Plan 2003–2008, the development of the SRDC R&D Plan 2007–2012, SRDC's strategic direction and the SRDC AOP 2007–08.

Directors interacted frequently with the industry peak bodies on several occasions during industry events, and the SRDC

program of Regional Workshops 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 ASMC, NSWSMC and Queensland Sugar Limited (QSL) 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 2006–07, 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 provided to the Board. Following the external audit of the Corporation's financial accounts each year, the Executive Director presents a Management Representation Memorandum to the Board for final adoption of the annual financial statements. For the 2006–07 financial year the memorandum was approved by the Board on 24 August 2007.

CAC Act Compliance

In August 2006 the Department of Finance and Administration advised SRDC of new annual reporting requirements on compliance and financial sustainability. A report indicating CAC Act compliance and financial sustainability for the 2007–08 financial year was approved by the Board on 24 August 2007 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.

In 2007 SRDC undertook a Risk Management review through ComCover Risk Management Service. SRDC had a high level of compliance; however several refinements have been identified and are being implemented.

At the March 2007 Board Meeting, the Board adopted the March 2007 Fraud Control Plan, March 2007 Risk Management Plan and March 2007 Business Continuity Plan as approved by the February 2007 Audit Committee.

The Minister for Agriculture Fisheries and Forestry advised SRDC in 2007 of the new requirement to comply with the policies of the Protective Security Manual.

SRDC undertook a review to identify any non-compliance issues with the Protective Security Manual. Updated policies have been drafted and approved by the SRDC Board.

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 2003–2008 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 with the approval of the SRDC Communications Plan 2006–07.

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.

A new SRDC website was launched in November 2006 to improve access to information, results and resources for and about SRDC's investment portfolio.

SRDC also revamped its corporate visual identity to support its push towards fostering a culture of innovation within the Australian sugarcane industry.

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

Articles reporting results from SRDC funded R&D, 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 Cairns in May 2007, other conference papers and articles published in recognised Australian and international scientific journals.

SRDC Board

Responsibilities

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.

The SRDC Board is responsible for the stewardship of the Corporation, and oversees corporate governance within SRDC.

Selection, appointment, training and advice

In 2006–07 SRDC Directors included the Chair and Government Director, appointed by the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry; the Executive Director, appointed by the Board of the Corporation; and six Nominated Directors, appointed by the Parliamentary Secretary on the recommendation of the Sugar Research and Development Corporation Selection Committee.

The Executive Director is the only full-time Director.

Directors other than the Executive Director serve on the Corporation for a term not exceeding three years. In 2006–07 amendments were made to the PIERD Act which removed the position of Government Director and allowed for an additional Nominated Director. The removal of the Government Director took effect from 28 May 2007.

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.

SRDC Directors

Robert G Granger
BEcon FAICD
Chair
(Non-executive)
Re-appointed 1 October 2005 for a two year term concluding 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.

Andrew Barfield
BAgrSc MBA GAICD
Deputy Chair
(Non-executive)
Re-appointed 1 May 2005 for three years.
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.

Russell C Muchow
BAgrSc (Hons) MAgrSc
PhD FAIAST FAICD
Executive Director
(Executive) (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.

David C Williamson
BA (Hons)
Government Director
(Non-executive)
Appointed 11 March 2003 (appointment ended 28 May 2007)

David Williamson was appointed Government Director on 11 March 2003. He is currently acting Executive Manager of the Corporate Policy Division within the Department of Agriculture, Fisheries and Forestry. David has a background in policy advice and program delivery across a range of agricultural portfolio areas and has held General Manager positions in International Division and Rural Policy and Innovation Division. He has served on a number of portfolio secretariats, including the 2005 Reference Group report on future directions in Australian agriculture and food policy, the 2002 Independent Assessment of the Sugar Industry, and wheat marketing reviews in 2000 and 2004.

David M Braddock QDA
Director (Non-executive)
Re-appointed 1 May 2005 for three years (retired as SRDC Director 31 March 2007)
Member: SRDC Audit Committee

David Braddock was Chair of the South Regional Advisory Group for the Sugar Industry Reform Programme 2004. He was a Director of the Maryborough Sugar Factory Limited from 1973 to 2005, and was Assistant General Manager from 1983 and Managing Director from 1999 to 2003. He has been involved in many sugar industry organisations as a grower and miller representative.

Patrice A Brown (Purcell)
BSc, Cert Sugar Tech, MEng (Civil), Cert Env Practioner, GAICD, MEIA
Director (Non-executive)
Re-appointed 1 May 2005 for three years
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)
Re-appointed 1 May 2005 for three years
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)
Re-appointed 1 May 2005 for three years
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.

Stephen Guazzo
Director
(Non-executive)
Appointed 28 April 2006, until 30 April 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, CANEGROWERS Herbert River and Director, CANEGROWERS Queensland.

Meetings of the Corporation

During the year ended 30 June 2007, the SRDC Board met five times, including one Resolution without Meeting via email. Attendance of Directors at Board meetings is listed in Table 5.1.

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.

Board Committees

To increase its effectiveness, the Board has established two committees. Both committees 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 2006–07 were:

- Dr M E Corbett, a non-executive Director of SRDC and member and convenor of the Audit Committee from 2 August 2004
- Ms Patrice A Brown, a non-executive Director of SRDC and member of the Audit committee from 23 March 2006
- Mr D M Braddock, a non-executive Director of SRDC and member of the Audit Committee from 2 August 2004 until 9 January 2007
- Mr Steve Guazzo, a non-executive Director of SRDC and member of the Audit Committee from 22 March 2007

Table 5.1 Directors' attendance at Board meetings and meetings of the Audit and Scholarships Committees in 2006–07

	R Granger	A Barfield	D Braddock	P Brown	M Corbett	S Guazzo	D Hogarth	R Muchow	D Williamson
Board meeting attended	5	5	4	4	5	5	5	5	5
Meetings held during membership	5	5	4	5	5	5	5	5	5
Audit committee meetings attended	–	–	1	2	2	0	–	–	–
Audit committee meetings held during membership	–	–	1	2	2	0	–	–	–
Scholarship committee meetings attended	–	2	–	–	–	–	2	–	–
Scholarship committee meetings held during membership	–	2	–	–	–	–	2	–	–

The Committee met on two occasions during 2006–07. 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 August 2006 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 2006–07 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
- Dr T M Henderson, an Investment Manager of SRDC and member of the Scholarships Committee from 28 July 2003 until 22 December 2006
- 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 2006–07 to assess scholarship applications, and to interview and select successful candidates. Attendance by Director members is listed in Table 5.1.

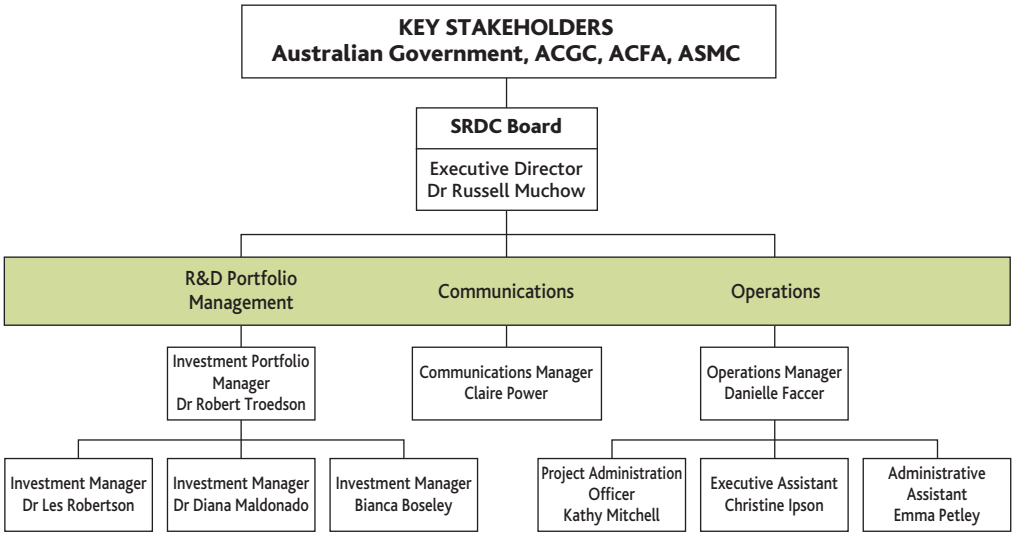
Staff

SRDC staff are employed under Section 87 of the PIERD Act. At 30 June 2007 the Corporation employed seven full time and two part time staff in addition to the Executive Director. Responsibilities for each staff member are indicated in SRDC's Corporate Structure (Figure 5.1). SRDC also engages three part time Project Officers to support grower groups undertaking Grower/Harvester Group Innovation Projects.

Two positions, Administrative Assistant and an additional R&D Investment Manager, were established in 2006–07 to provide support to the Corporation's operations and the management of the investment portfolio.

SRDC staff, excluding regionally based Project Officers, are located at the SRDC office at Level 16, 141 Queen Street, Brisbane 4000.

Figure 5.1 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.

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 2006–07. 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 one enquiry under the Freedom of Information (FOI) Act in 2006–07. A full FOI Statement is attached in Appendix F.

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 2006–07.

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.

Australian National
Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Minister for Agriculture, Fisheries and Forestry

Matters relating to the Electronic Presentation of the Audited Financial Statements

This auditor's report relates to the financial statements published on the website of the Sugar Research and Development Corporation for the year ended 30 June 2007. The Directors are responsible for the integrity of the web site.

This auditor's report refers only to the primary statements, schedules and notes named below. It does not provide an opinion on any other information which may have been hyperlinked to/from the audited financial statements.

If the users of this report are concerned with the inherent risks arising from electronic data communications they are advised to refer to the hard copy of the audited financial statements in the Sugar Research and Development Corporation's annual report.

Scope

I have audited the accompanying financial statements of the Sugar Research and Development Corporation for the year ended 30 June 2007, which comprise: a statement by the Directors and Executive Director; income statement; balance sheet; statement of changes in equity; cash flow statement; schedules of commitments and contingencies; a summary of significant accounting policies; and other explanatory notes.

The Responsibility of the Directors for the Financial Statements

The Directors of the Sugar Research and Development Corporation are 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* and the Australian Accounting Standards (including 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 Sugar Research and Development Corporation's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances,

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but not for the purpose of expressing an opinion on the effectiveness of the Sugar Research and Development Corporation's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Directors, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence we 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 ethical 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,* and the Australian Accounting Standards (including the Australian Accounting Interpretations); 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 2007 and of its financial performance and its cash flows for the year then ended.

Australian National Audit Office

Puspa Dash

Puspa Dash
Acting Executive Director

Delegate of the Auditor-General

Canberra
30 August 2007

6

Financial Statements

for the Year Ended 30 June 2007

SUGAR RESEARCH AND DEVELOPMENT CORPORATION STATEMENT BY DIRECTORS AND EXECUTIVE DIRECTOR

In our opinion, the attached Financial Statements for the year ended 30 June 2007 are based on properly maintained financial records and give a true and fair view of the matters required by the Finance Ministers 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.

R G Granger *Chairman*	M E Corbett *Director*	R J Troedson *Acting Executive Director*	D L Faccer *Operations Manager*
29 August 2007	29 August 2007	28 August 2007	29 August 2007

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
INCOME STATEMENT

for the year ended 30 June 2007

	Notes	2007 $	2006 $
INCOME			
Revenue			
Revenue from Government	**4A**	**5,521,833**	5,195,040
Interest	**4B**	**725,740**	588,626
Industry contributions (sugar levies)	**4C**	**4,886,875**	5,341,747
Total revenue		**11,134,448**	11,125,413
Total Income		**11,134,448**	11,125,413
EXPENSES			
Employee benefits	**5A**	**702,962**	781,177
Suppliers	**5B**	**966,148**	896,729
Depreciation and amortisation	**5C**	**23,067**	22,224
Losses from asset sales	**5D**	**7,069**	1,275
Grants	**5E**	**9,024,555**	8,458,288
Total Expenses		**10,723,801**	10,159,693
Surplus/(Deficit)		**410,647**	965,720

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

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
BALANCE SHEET

as at 30 June 2007

	Notes	2007 $	2006 $
ASSETS			
Financial Assets			
Cash and cash equivalents	**6A**	**951,020**	2,019,691
Trade and other receivables	**6B**	**247,874**	605,266
Investments under s18 of the CAC Act	**6C**	**7,943,338**	6,128,865
Total financial assets		**9,142,232**	8,753,822
Non-Financial Assets			
Leasehold improvements	**7A, C**	**1,244**	5,933
Plant and equipment	**7B, C**	**86,002**	75,921
Other non-financial assets	**7D**	**6,388**	51,145
Total non-financial assets		**93,634**	132,999
Total Assets		**9,235,866**	8,886,821
LIABILITIES			
Payables			
Suppliers	**8A**	**48,466**	83,664
Grants	**8B**	**411,320**	481,605
Total payables		**459,786**	565,269
Provisions			
Employee provisions	**9A**	**219,014**	175,133
Total provisions		**219,014**	175,133
Total Liabilities		**678,800**	740,402
Net Assets		**8,557,066**	8,146,419
EQUITY			
Reserves		**2,188**	2,188
Retained surpluses/(accumulated deficits)		**8,554,878**	8,144,231
Total Equity		**8,557,066**	8,146,419
Current Assets		**9,148,620**	8,804,967
Non-Current Assets		**87,246**	81,854
Current Liabilities		**575,048**	655,782
Non-Current Liabilities		**103,752**	84,620

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 2007

Item	Retained Earnings		Asset Revaluation Reserves		TOTAL EQUITY	
	2007 $	2006 $	**2007 $**	2006 $	**2007 $**	2006 $
Opening Balance	**8,144,231**	7,178,511	**2,188**	2,188	**8,146,419**	7,180,699
Surplus (Deficit) for the period	410,647	965,720	**–**	–	410,647	965,720
Closing balance at 30 June	**8,554,878**	8,144,231	**2,188**	2,188	**8,557,066**	8,146,419

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 2007

	Notes	2007 $	2006 $
OPERATING ACTIVITIES			
Cash received			
Industry contributions (sugar levies)		**5,073,969**	5,410,236
Revenue from Government		**5,521,834**	5,094,525
Interest		**748,756**	579,464
GST received from Australian Taxation Office		**1,021,818**	666,885
Total cash received		**12,366,377**	11,751,110
Cash used			
Employees		**645,062**	731,155
Suppliers		**894,957**	815,221
Grants		**10,044,860**	9,146,685
Total cash used		**11,584,879**	10,693,061
Net cash from/(used by) operating activities	**10**	**781,498**	1,058,049
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of plant and equipment		**34,989**	16,000
Total cash received		**34,989**	16,000
Cash used			
Purchase of plant and equipment		**70,685**	28,668
Total cash used		**70,685**	28,668
Net cash from/(used by) investing activities		**(35,696)**	(12,668)
Net increase or (decrease) in cash held		**745,802**	1,045,381
Cash at the beginning of the reporting period		**8,148,556**	7,103,175
Cash at the end of the reporting period	**6A, 6C**	**8,894,358**	8,148,556

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

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
SCHEDULE OF COMMITMENTS

as at 30 June 2007

	2007	2006
	$	$
BY TYPE		
Commitments receivable		
GST recoverable on commitments	**(2,296,574)**	(1,855,335)
Total commitments receivable	**(2,296,574)**	(1,855,335)
Other commitments		
Operating leases[1]	**1,085,730**	75,557
Research and development grants — PIERD	**24,176,580**	20,408,686
Total other commitments	**25,262,310**	20,484,243
Net commitments by type	**22,965,736**	18,628,908
BY MATURITY		
Commitments receivable		
Other commitments receivable		
One year or less	**(1,115,519)**	(921,248)
From one to five years	**(1,181,055)**	(933,864)
Over five years	**–**	(223)
Total other commitments receivable	**(2,296,574)**	(1,855,335)
Operating lease commitments		
One year or less	**181,563**	62,020
From one to five years	**904,167**	13,537
Total operating lease commitments	**1,085,730**	75,557
Research and development grant commitments		
One year or less	**12,089,139**	10,133,725
From one to five years	**12,087,441**	10,272,506
Over five years	**–**	2,455
Total research and development grant commitments	**24,176,580**	20,408,686
Net commitments by maturity	**22,965,736**	18,628,908

NB: Commitments are GST inclusive where relevant.

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

Nature of lease	***General description of leasing arrangement***
Leases for office accommodation	Lease payments are subject to annual increase of 5%. The initial periods of office accommodation leases are still current. A new lease proposal has been signed for September 2007 which includes expansion into the adjoining office space.

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

SUGAR RESEARCH AND DEVELOPMENT CORPORATION
SCHEDULE OF CONTINGENCIES

as at 30 June 2007

Contingent Liabilities	Notes	Bank Guarantees	
		2007	**2006**
		$	$
Balance from previous period	11	**17,675**	17,675
Total Contingent Liabilities		**17,675**	17,675

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

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

Note 1: Summary of Significant Accounting Policies

1.1 Objectives of Sugar Research and Development Corporation

The objective of the 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.

1.2 Basis of Preparation of Financial Report

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 Financial Statements and notes have been prepared in accordance with:

- Finance Minister's Orders (or FMOs) for reporting periods ending on or after 01 July 2006; and
- Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board that apply for the reporting period.

The financial report has 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 whole dollar.

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.

1.3 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.

1.4 Statement of Compliance

The financial statements complies with Australian Accounting Standards, which include Australian Equivalents to International Financial Reporting Standards (AEIFRS).

Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the effective date in the current period.

Other effective requirement changes

The following amendments, revised standards or interpretations have become effective but have had no financial impact or do not apply to the operations of the Corporation.

Amendments:

- 2005–1 Amendments to Australian Accounting Standards [AASBs 1, 101, 124]
- 2005–6 Amendments to Australian Accounting Standards [AASB 3]
- 2006–1 Amendments to Australian Accounting Standards [AASB 121]
- 2006–3 Amendments to Australian Accounting Standards [AASB 1045]

Interpretations:

- UIG 4 Determining whether an Arrangement contains a Lease
- UIG 5 Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
- UIG 7 Applying the Restatement Approach under AASB129 financial Reporting in Hyperinflationary Economies
- UIG 8 Scope of AASB 2
- UIG 9 Reassessment of Embedded Derivatives

UIG 4 and UIG 9 might have impacts in future periods, subject to existing contracts being renegotiated.

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 periods. It is estimated that the impact of adopting these pronouncements when effective will have no material financial impact on future reporting periods.

Financial instrument disclosure

AASB7 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 presently. 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 reports.

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
- UIG 10 Interim Financial Reporting and Impairment

1.5 Revenue

Revenue

The revenues described in this Note are revenues relating to the core operating activities of the Corporation.

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.

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due less any provision for bad and doubtful debts. Collectability of debts is reviewed at balance date. Provisions are made when collectability of the debt is no longer probable.

Revenues from Government

The full amount of the appropriation for the Corporation's outputs for the year is recognised as revenue.

1.6 Gains

Sale of Assets

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

1.7 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 transactions with the Government in the 2007 financial year, (2006, nil).

1.8 Employee Benefits

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 leave 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 liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of all employees at 30 June 2007. In determining the present value of the liability, the Corporation has taken into account attrition rates and pay increases through promotion and inflation.

Superannuation

The majority of the Corporation's employees are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap). Some employees have chosen their own superannuation funds to contribute to.

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.

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.

From 1 July 2005, new employees are eligible to join the PSSap scheme.

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

1.9 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.

1.10 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.

Grant expenses are recognised when a milestone is approved.

1.11 Cash

Cash means notes and coins held and any deposits held at call with a bank or financial institution. 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.

1.12 Derecognition of Financial Assets and Liabilities

Financial assets are derecognised when the contractual rights to the cash flows from the financial assets expire or the asset is transferred to another Entity. In the case of a transfer to another entity, it is necessary that the risks and rewards of ownership are also transferred.

Financial liabilities are derecognised when the obligation under the contract is discharged, cancelled or expires.

1.13 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).

1.14 Contingent Liabilities

Contingent Liabilities 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 represent an existing liability in respect of which settlement is not probable or the amount cannot be reliably measured. Remote contingencies are part of this disclosure. Where settlement becomes probable, a liability is recognised. A liability is recognised when its existence is confirmed by a future event, settlement becomes probable or reliable measurement becomes possible.

1.15 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.

1.16 Property, Plant and Equipment

Asset Recognition Threshold

Purchases of property, 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

Assets which are surplus to requirements are measured at their net realisable value. At 30 June 2007 the Corporation held no surplus assets (30 June 2006: $0)

Following initial recognition at cost, property 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 surplus and deficit. Revaluation decrements for a class of assets are recognised directly through surplus and deficit 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. Leasehold improvements are depreciated on a straight-line basis over the lesser of the estimated useful life of the improvements or the unexpired period of the lease.

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:

	2007	2006
Computer equipment	**3 years**	3 years
Furniture and fittings	**13 $\frac{1}{3}$ years**	13 $\frac{1}{3}$ years
Leasehold improvements	**Lease term**	Lease term
Motor vehicles	**6 $\frac{2}{3}$ years**	6 $\frac{2}{3}$ years

Impairment

All property, plant and equipment were assessed for impairment at 30 June 2007. 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.

No indicators of impairment were found for plant and equipment held at fair value.

1.17 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 ot 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 the 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.

1.18 Financial Risk Management

The Corporation's activities expose it to normal commercial financial risk. As a result of the nature of the Corporation's business and internal and Australian Government policies, dealing with the management of financial risk, the Corporation's exposure to market, credit, liquidity and cash flow and fair value interest rate risk is considered to be low.

1.19 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.

1.20 Foreign Currency

Transactions denominated in a foreign currency are converted at the exchange rate at the date of the transaction. Foreign currency receivables and payables are translated at the exchange rates current as at balance date. Associated currency gains and losses are not material.

1.21 Insurance

The Corporation has insured for risks through the Government's insurable risk managed fund, called 'Comcover'. Workers' compensation is insured through the Government's Comcare Australia.

Note 2: Economic Dependency

The normal operating activities of the the Corporation are dependent on the receipt of sugar levies from cane growers and millers which are collected by the Australian Government and then remitted to the Corporation.

The Corporation is also economically dependent on funding from the Australian Government for its continued existence and ability to carry out its normal activities. The Government provides funding to the Corporation on the basis of a multiple of the sugar levies collected from cane growers and millers.

Note 3: Events after the Balance Sheet Date

The only event which occurred after balance date that affects the Corporation's 2006–07 financial statements is the retirement of Dr Russell Muchow (Executive Director). Robert Troedson has been appointed as Acting Executive Director and will sign the 2007 Financial Statements.

The Board of the Corporation reached agreement with Dr Russell Muchow in relation to his retirement from the office of Executive Director of the Corporation. The agreed departure date is 20 July 2007 at which time a payment of $62,507.50 will be made.

	2007	2006
Note 4: Income	**$**	**$**
Revenue		
Note 4A: Revenue from Government		
Commonwealth contribution — PIERD Act	**5,308,333**	4,765,626
Commonwealth contribution — FMS	**213,500**	429,414
Total revenue from Government	**5,521,833**	5,195,040
Note 4B: Interest		
Cash at bank	**84,792**	76,950
Short term deposits	**640,948**	511,676
Total interest	**725,740**	588,626
Note 4C: Industry contributions (sugar levies)		
Industry contributions (sugar levies)	**4,886,875**	5,341,747
Total Industry contributions (sugar levies)	**4,886,875**	5,341,747

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

	2007	2006
Note 5: Expenses	**$**	$
Note 5A: Employee benefits		
Wages and salaries	**559,783**	602,959
Superannuation	**70,639**	73,560
Leave and other entitlements	**72,540**	104,658
Total employee benefits	**702,962**	781,177
Note 5B: Suppliers		
Provision of goods — external entities	**40,732**	38,522
Rendering of services — external entities	**845,864**	781,424
Operating lease rentals	**77,810**	74,839
Workers' compensation premium	**1,742**	1,944
Total supplier expenses	**966,148**	896,729
Note 5C: Depreciation and amortisation		
Depreciation		
Plant and equipment	**10,717**	16,169
Leasehold improvements	**4,691**	4,823
Motor vehicles	**7,659**	1,232
Total depreciation	**23,067**	22,224
Note 5D: Losses from asset sales		
Plant and equipment:		
Proceeds from disposal	**(34,989)**	(44,090)
Carrying value of assets sold	**42,058**	45,365
Total losses from disposal of assets	**7,069**	1,275
Note 5E: Grants		
The Corporation makes grants to support research and development for the sugar industry in Australia.		
Research and development grants — PIERD	**9,024,555**	8,458,288
Total grants	**9,024,555**	8,458,288

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

Note 6: Financial Assets	2007 $	2006 $
Note 6A: Cash and cash equivalents		
Cash at bank or on deposit	**951,020**	2,019,691
Total cash and cash equivalents	**951,020**	2,019,691
Note 6B: Trade and other receivables		
GST receivable from the Australian Taxation Office	**196,121**	353,341
Goods and services	**–**	1,253
Levies receivable	**35,783**	211,656
Interest receivable	**15,970**	39,016
Total trade and other receivables (net)	**247,874**	605,266
Note 6C: Investments under s18 of the CAC Act		
Term deposits	**7,943,338**	6,128,865
Total investments	**7,943,338**	6,128,865

All other financial assets are current.

Note 7: Non-Financial Assets	2007 $	2006 $
Note 7A: Leasehold improvements		
Leasehold improvements		
— at fair value	**13,500**	13,500
— accumulated depreciation	**(12,256)**	(7,567)
Total leasehold improvements (non-current)	**1,244**	5,933
Note 7B: Plant and equipment		
Plant and equipment:		
— at fair value	**103,343**	93,625
— accumulated depreciation	**(17,341)**	(17,704)
Total plant and equipment (non-current)	**86,002**	75,921

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

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

Note 7C: Analysis of plant and equipment

TABLE A — Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment

2007	Leasehold improvements	Plant & equipment	Total
	$	$	$
As at 1 July 2006			
Gross book value	13,500	93,626	**107,126**
Accumulated depreciation/amortisation	(7,567)	(17,704)	**(25,271)**
Net book value 1 July 2006	5,933	75,922	**81,855**
Additions:			
By purchase	–	70,685	**70,685**
Depreciation/amortisation expense	(4,689)	(18,378)	**(23,067)**
Disposals:			
From disposal	–	(42,227)	**(42,227)**
Net book value 30 June 2007	1,244	86,002	**87,246**
Net book value as of 30 June 2007 represented by:			
Gross book value	13,500	103,343	**116,843**
Accumulated depreciation/amortisation	(12,256)	(17,341)	**(29,597)**
Closing net book value	**1,244**	**86,002**	**87,246**

2006	Leasehold improvements	Plant & equipment	Total
	$	$	$
As at 1 July 2005			
Gross book value	13,500	92,368	**105,868**
Accumulated depreciation/amortisation	(2,746)	(10,435)	**(13,181)**
Net book value 1 July 2005	10,754	81,933	**92,687**
Additions:			
By purchase	–	56,758	**56,758**
Depreciation/amortisation expense	(4,823)	(17,401)	**(22,224)**
Disposals:			
From disposal	–	(45,366)	**(45,366)**
Net book value 30 June 2006	5,933	75,922	**71,099**
Net book value as of 30 June 2006 represented by:			
Gross book value	13,500	93,626	**107,126**
Accumulated depreciation/amortisation	(7,567)	(17,704)	**(25,271)**
Prior Year Closing net book value	**5,933**	**75,922**	**81,855**

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

	2007	2006
Note 7D: Other Non-Financial Assets	**$**	$
Prepayments	**6,388**	51,145
Total other non-financial assets	**6,388**	51,145
All other non-financial assets are current assets.		
Note 8: Payables		
Note 8A: Suppliers		
Trade creditors	**48,466**	83,664
Total suppliers payable	**48,466**	83,664
All supplier payables are current liabilities.		
Note 8B: Grants Payable		
Grants payable	**411,320**	481,605
Total grants payable	**411,320**	481,605
All grants payable are current liabilities.		
Note 9: Provisions		
Note 9A: Employee Provisions		
Salaries and wages	**3,690**	3,484
Leave	**214,789**	171,158
Superannuation	**535**	491
Total employee provisions	**219,014**	175,133
Employee provisions are represented by:		
Current	**115,262**	90,513
Non-current	**103,752**	84,620
Total employee provisions	**219,014**	175,133

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 $11,857 (2006: $24,702), in excess of one year $207,157 (2006: $150,431).

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

	2007	2006
Note 10: Cash Flow Reconciliation	**$**	$
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Report cash and cash equivalent as per:		
Cash Flow Statement	**8,894,358**	8,148,556
Balance Sheet	**951,020**	2,019,691
Difference	**7,943,338**	6,128,865
The difference is represented by the cash investments described in Note 6C totalling $7,943,338		
Balance Sheet items comprising above cash: 'Financial Asset — Cash'	**951,020**	2,019,691
Reconciliation of operating result to net cash from operating activities:		
Operating result	**410,647**	965,720
Depreciation and amortisation	**23,067**	22,224
Loss from disposal of assets	**7,238**	1,276
(Increase)/decrease in net receivables	**402,136**	(138,677)
Increase/(decrease) in employee provisions	**43,631**	38,912
Increase/(decrease) in supplier payables	**(35,196)**	23,759
Increase/(decrease) in grants payable	**(70,275)**	275,249
Increase/(decrease) in other payables	**250**	(130,414)
Net cash from/(used by) operating activities	**781,498**	1,058,049

Note 11: Contingent Liabilities and Assets

The Schedule of Contingencies in the Financial Report reports a contingent liability as at 30 June 2007 being a bank guarantee provided over the lease of the head office premises occupied in Level 16/141 Queen Street, Brisbane.

In relation to the new lease on Level 16/141 Queen Street Brisbane, the final lease agreement is yet to be signed, however, it is envisaged that a fit out will take place in September 2007 for the new premises. A quote has been received by building designers and a budget of approximately $100,000 has been set which includes designer's fees, consultant's fees and approval costs.

			2007	2006
Note 12: Directors Remuneration			**$**	$
The number of directors of the Corporation included in these figures are shown below in the relevant remuneration bands:				
$ Nil	to	$14 999	**1**	1
$15,000	to	$29,999	**6**	6
$30,000	to	$44,999	**1**	1
$180,000	to	$194,999	**1**	–
$195,000	to	$209,999	**–**	1
Total number of directors of the Corporation			**9**	9
Total remuneration received or due and receivable by directors of the Corporation			**345,993**	293,948

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.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

Note 13: Related Party Disclosures

The aggregate remuneration of Directors is disclosed in Note 12.

Grants were made to Mackay Area Productivity Services Ltd of which Andrew Barfield is the Chairman and Herbert River District Cane Growers Organisation Limited of which Stephen Guazzo is Director. All transactions with these organisations were under normal terms and conditions. The Directors involved took no part in the relevant decisions of the Board.

	2007	2006
Note 14: Executive Remuneration	**$**	$
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**	1
Total	**1**	1

The aggregate amount of Executive Director remuneration is included in note 13 above.

	2007	2006
Note 15: Remuneration of Auditors	**$**	$
Financial statement audit services provided to the Corporation	**25,500**	12,000
	25,500	12,000

No other services are provided by the Auditor-General.

	2007	2006
Note 16: Average Staffing Levels	**9**	8
The average staffing levels for the Corporation during the year were:	**9**	8

Note 17: Financial Instruments

Note 17A: Interest Rate Risk

Financial Instrument	Notes	Floating Interest Rate		Fixed Interest Rate Maturing In			
				1 Year or Less		1 to 5 Years	
		2007 $	2006 $	**2007 $**	2006 $	**2007 $**	2006 $
Financial Assets							
Cash	6A	**950,520**	2,019,191	**–**	–	**–**	–
Appropriation receivable	6B	**–**	–	**–**	–	**–**	–
Investments	6C	**–**	–	**7,943,338**	6,128,865	**–**	–
Accrued interest	6B	**–**	–	**–**	–	**–**	–
Total		**950,520**	2,019,191	**7,943,338**	6,128,865	**–**	–
Financial Liabilities							
Trade creditors	8A	**–**	–	**–**	–	**–**	–
Grants payable	8B	**–**	–	**–**	–	**–**	–
Total		**–**	–	**–**	–	**–**	–

(Note 17A: Interest Rate Risk — *continued*)

Fixed Interest Rate Maturing In		Non-Interest Bearing		Total		Weighted Average Effective Interest Rate	
> 5 Years							
2007 $	2006 $	**2007 $**	2006 $	**2007 $**	2006 $	**2007 %**	2006 %
–	–	**500**	500	**951,020**	2,091,691	**5.75**	4.75
–	–	**35,783**	212,909	**35,783**	212,909		
–	–	**–**	–	**7,943,338**	6,128,865	**6.06**	5.32
–	–	**15,970**	39,016	**15,970**	39,016		
–	–	**52,253**	252,425	**8,946,111**	8,400,481		
–	–	**48,466**	83,664	**48,466**	83,664		
–	–	**411,320**	481,605	**411,320**	481,605		
–	–	**459,786**	565,269	**459,786**	565,269		

Note 17B: Fair Values of Financial Assets and Liabilities

		2007		2006	
		Total Carrying Amount	Aggregate Fair Value	Total Carrying Amount	Aggregate Fair Value
	Notes	$	$	$	$
Departmental Financial Assets					
Cash	6A	**951,020**	**951,020**	2,019,691	2,019,691
Interest receivable	6B	**15,970**	**15,970**	39,016	39,016
Other receivables	6B	**35,783**	**35,783**	211,656	211,656
Term deposits	6C	**7,943,338**	**7,943,338**	6,128,865	6,128,865
Total financial assets		**8,946,111**	**8,946,111**	8,399,228	8,399,228
Financial Liabilities (Recognised)					
Trade creditors	8A	**48,466**	**48,466**	83,664	83,664
Grants payable	8B	**411,320**	**411,320**	481,605	481,605
Total financial liabilities (recognised)		**459,786**	**459,786**	565,269	565,269

Note 17C: Credit Risk Exposures

The Corporation's maximum exposures to credit risk at reporting date in relation to each class of recognised financial assets is the carrying amount of those assets as indicated in the Balance Sheet.

The Corporation has no significant exposures to any concentrations of credit risk.

All figures for credit risk referred to do not take into account the value of any collateral or other security.

Note 18: 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.

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

Note 18A: Net Cost of Outcome Delivery

	Outcome 1		Total	
	2007	2006	**2007**	2006
	$	$	**$**	$
Expenses				
Administered expenses	**–**	–	**–**	–
Departmental expenses	**10,723,801**	10,159,693	**10,723,801**	10,159,693
Total expenses	**10,723,801**	10,159,693	**10,723,801**	10,159,693
Costs recovered from provision of goods and services to the non-government sector				
Administered	**–**	–	**–**	–
Departmental	**–**	–	**–**	–
Total costs recovered	**–**	–	**–**	–
Departmental				
Goods and Services Income from Related Entities	**4,886,875**	5,341,747	**4,886,875**	5,341,747
Interest	**725,740**	588,626	**725,740**	588,626
Total Departmental	***5,612,615***	*5,930,373*	***5,612,615***	*5,930,373*
Total other external income	**5,612,615**	5,930,373	**5,612,615**	5,930,373
Net cost/(contribution) of outcome	**5,111,186**	4,229,320	**5,111,186**	4,229,320

SUGAR RESEARCH AND DEVELOPMENT CORPORATION NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2007

Note 18B: Major Classes of Departmental Income and Expenses by Output Groups and Outputs

Outcome 1	Output 1		Output 2		Output 3	
	2007 $	2006 $	**2007 $**	2006 $	**2007 $**	2006 $
Departmental expenses						
Employees	**105,444**	117,468	**344,451**	383,729	**119,504**	133,131
Suppliers	**144,922**	134,218	**473,413**	438,445	**164,245**	152,113
Grants	**1,353,684**	1,268,743	**4,422,032**	4,144,561	**1,534,174**	1,437,909
Depreciation and amortisation	**3,460**	3,334	**11,303**	10,890	**3,921**	3,778
Losses from asset sales	**1,060**	191	**3,464**	625	**1,202**	217
Total departmental expenses	**1,608,570**	1,523,954	**5,254,663**	4,978,250	**1,823,046**	1,727,148
Funded by:						
Income from government	**828,275**	779,256	**2,705,698**	2,545,570	**938,712**	883,157
Interest	**108,861**	88,294	**355,613**	288,427	**123,376**	100,066
Industry contributions (sugar levies)	**733,031**	801,262	**2,394,569**	2,617,456	**830,768**	908,097
Total departmental revenues	**1,670,167**	1,668,812	**5,455,880**	5,451,453	**1,892,856**	1,891,320

Outcome 1 (*continued*)	Output 4		Outcome 1 Total	
	2007 $	2006 $	**2007 $**	2006 $
Departmental expenses				
Employees	**133,563**	148,793	**702,962**	783,121
Suppliers	**183,568**	170,009	**966,148**	894,785
Grants	**1,714,665**	1,607,075	**9,024,555**	8,458,288
Depreciation and amortisation	**4,383**	4,222	**23,067**	22,224
Losses from asset sales	**1,343**	242	**7,069**	1,275
Total departmental expenses	**2,037,522**	1,930,341	**10,723,801**	10,159,693
Funded by:				
Income from government	**1,049,148**	987,057	**5,521,833**	5,195,040
Interest	**137,891**	111,839	**725,741**	588,626
Industry contributions (sugar levies)	**928,506**	1,014,932	**4,886,874**	5,341,747
Total departmental revenues	**2,115,545**	2,113,828	**11,134,448**	11,125,413

Appendix A

Composition of National Research Priorities attributed to each Program 2006–07

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	A7	B3	B4	C2	C3	C4	C5	D3	
Program A	0	12	0	182	0	805	0	0	43	321	0	1362
Program B	550	1089	584	0	0	320	1306	0	98	517	256	4720
Program C	3	41	42	0	0	280	263	18	107	93	0	847
Program D	59	45	34	0	28	61	50	0	174	1495	34	1983
Total	612	1187	661	182	28	1466	1619	18	423	2425	291	8912

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

A7: Responding to climate change and variability

Promoting and Maintaining Good Health

B3: Preventive healthcare

B4: Strengthening Australia's social and economic fabric

Frontier Technologies for Building and Transforming Australian Industries

C2: Frontier technologies

C3: Advanced materials

C4: Smart information use

C5: Promoting an innovation culture and economy

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) 2006–07

Rural Research & Development Priorities (RRDP)	Sustainable Natural Resource Management		Improving Competitiveness through a Whole of Industry Approach		Maintaining & Improving Confidence in the Integrity of Australian Agricultural..... Products		Improved Trade and Market Access		Use of Frontier Technologies		Creating an Innovative Culture		Protecting Australia from Invasive Diseases and Pests		Other Research	
	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Program A	0	0	906	10	0	0	0	0	112	1	348	4	0	0	0	0
Program B	2136	24	379	4	102	1	0	0	1341	15	489	5	278	3	0	0
Program C	97	1	389	4	9	0	11	0	280	3	61	1	0	0	0	0
Program D	155	2	99	1	55	1	0	0	34	1	1562	17	78	1	0	0
Total	2388	27	1773	20	166	2	11	0	1766	20	2460	28	357	4	0	0

Appendix C

Research Project Listing 2006–07

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
Program A: Value Chain Integration				
Strategy: Optimising use of whole-of-system resources				
BSS264	Adoption of an optimal season length for increased industry profitability	BSES Ltd	Mr Lawrence DiBella	$61,000
CGH002	Enhancing efficiency and integration from field to factory in the Herbert	CANEGROWERS Herbert River	Mr Peter Sheedy	$224,858
CGT001	Development and implementation of harvest management planning tools for the maximisation of CCS in the Tully district	CANEGROWERS Tully	Mr Trent Stainlay	$65,000
CHC002	Development of a real time information system for Clarence harvesters	Clarence Harvesting Cooperative	Mr Peter Rose	$23,064
CHC030	Herbert Cultural Imprint Analysis — A pathway to greater understanding and co-operation in decision making	CSR Sugar	Dr Andrew Wood	$0
CSR033	Benchmarking harvest group practices in the Burdekin	CSR Sugar	Dr Lisa McDonald	$52,509
CSR038	Increasing in-mill NIR effectiveness and communicating data to all sectors for improved decision making in the sugarcane value chain	CSR Sugar	Dr Lisa McDonald	$132,200
CVA002	Managing Climate Variability Program	Land and Water Australia	Dr Diana Maldonado	$40,000
JCU027	Defeating the Autumn Predictability Barrier	James Cook University	Dr Yvette Everingham	$71,920
MAS001	A regional partnership approach to developing a sustainable sugar cane system	Mossman Agricultural Services	Mr Allan Rudd	$40,096
MSF002	Implementing integrated harvesting–transport–milling logistics through adoption of optimised road transport scheduling	Maryborough Sugar Factory	Mr Peter Downs	$57,900
NSC005	Implementing an integrated sugar system in NSW	New South Wales Sugar Milling Co-operative Ltd	Mr Rick Beattie	$50,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
SRD011	Climate change workshop	Sugar Research and Development Corporation	Dr Diana Maldonado	$11,138
WS009	Assessment of regional R&D needs and opportunities	Sugar Research and Development Corporation	Mrs Claire Power	$78,224
Program A: Value Chain Integration				
Strategy: Facilitating sustainable whole-of-system change				
CSE009	Moving from case studies to whole of industry: Implementing methods for wider industry adoption	CSIRO Sustainable Ecosystems	Dr Yvette Everingham	$178,822
CSE019	Global change: helping inform the Australian sugar industry on potential impacts, possible adaptation strategies and best-bet investment of R&D	CSIRO Sustainable Ecosystems	Dr Sarah Park	$53,684
HGP001	Establishing a million tonne harvesting co-operative	Richmond River Cane Growers' Association Ltd	Mr Andrew Tickle	$40,000
HGP006	Improved harvesting efficiency in farming systems	Tabone Harvesting — Group No. 131	Mr Brian Tabone	$40,000
HGP007	Siding roster optimisation in the Herbert	CANEGROWERS Herbert River	Mr Franco Zaini	$5,000
HGP008	Incentive price harvesting signals versus traditional payment system	Ripple Creek Harvesting	Mr Anthony Girgenti	$11,000
LWA001	Rural industries and carbon trading	Land and Water Australia	Dr Diana Maldonado	$5,000
NSC006	Achieving world's best practice harvesting and transport costs for the NSW sugar industry	New South Wales Sugar Milling Co-operative Ltd	Mr Rick Beattie	$124,728
Program B: Farming Systems				
Strategy: Underpinning sustainable farming systems				
BBF001	Pilot area-wide natural resource management group — Building grower capacity to understand and better manage groundwater	Burdekin Bowen Integrated Floodplain Management Advisory Committee	Mr Enrico Mio	$106,880
BSS302	Epidemiology studies into sugarcane smut	BSES Ltd	Dr Robert Magarey	$96,400

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
CG013	Growers working together to improve water quality in the Herbert Sugar Industry	CANEGROWERS Herbert River	Dr Tim Wrigley	$97,026
CPI009	New soybean varieties for fallow cropping of sugarcane fields	CSIRO Plant Industry	Dr Andrew James	$74,216
CSE007	Implementation of irrigation practices for profitable resource efficient sugarcane production in the Ord	CSIRO Sustainable Ecosystems	Dr Geoff Inman-Bamber	$72,600
CSE018	Precision Agriculture — An avenue for profitable innovation in the Australian sugar industry, or expensive technology we can do without ?	CSIRO Sustainable Ecosystems	Dr Rob Bramley	$40,000
DPI015	Enhancing an economic way of doing business in the cane industry	Queensland Department of Primary Indusrties and Fisheries	Mr Neil Sing	$80,000
FMS008	Farm health and safety tools for the Sugar FMS framework	AGRECON	Mr Don Chambers	$22,519
MAF001	Irrigation runoff event monitoring	Mulgrave Area Farm Integrated Action	Mr Chris Hesp	$4,785
NCA009	Review, analysis and discussion of Precision Agriculture technologies	National Centre for Engineering in Agriculture	Mr Rod Davis	$40,000
NCA010	Development of a prototype precision spot spray system using image analysis and plant identification technology	National Centre for Engineering in Agriculture	Mr Steven Rees	$40,000
SRD002	Case studies of improved economic performance from implementing innovations on farms.	Sugar Research and Development Corporation	Dr Les Robertson	$0
SRD012	Precision Agriculture workshop	Sugar Research and Development Corporation	Dr Les Robertson	$273
SRD016	Future Farming Systems specialist workshop	Sugar Research and Development Corporation	Dr Les Robertson	$55,794
UNW003	Development of a constructed wetland for improving water quality in sugarcane drainage, and ensuring its community acceptance and industry adoption	The University of New South Wales	Assoc Prof Mike Melville	$6,770

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
Program B: Farming Systems				
Strategy: Improving the genetic performance of the sugarcane plant				
BPS001	Identifying management zones within cane paddocks: an essential foundation for precision sugarcane agriculture	Burdekin Productivity Services Ltd	Mr Don Pollock	$0
BSS256	Reducing the Australian sugar industry's genetic vulnerability to sugarcane smut	BSES Ltd	Mr Barry Croft	$45,834
BSS265	Smut-proofing the Australian industry — ensuring a reliable cane supply through reduced genetic vulnerability to sugarcane smut	BSES Ltd	Mr Barry Croft	$99,215
BSS267	Maximising whole-of-industry benefits from the Australian sugarcane improvement program through an optimal genetic evaluation system	BSES Ltd	Dr Xianming Wei	$213,217
BSS296	Evaluation of genotypes for a controlled-traffic farming system	BSES Ltd	Dr Barry Salter	$137,385
CRC002	Application of molecular markers to sugarcane breeding	CRC Sugar Industry Innovation through Biotechnology	Dr Phillip Jackson	$69,000
CRC005	Understanding the reproductive biology and ecology of sugarcane to manage the safe release of genetically modified cultivars	CRC Sugar Industry Innovation through Biotechnology	Dr Graham Bonnett	$151,932
CSE014	Increased CCS, cane yield and water use efficiency by exploiting interactions between genetics and management	CSIRO Sustainable Ecosystems	Dr Geoff Inman-Bamber	$313,815
SRD017	Emerging Technologies specialist workshop	Sugar Research and Development Corporation	Dr Robert Troedson	$38,639
Program B: Farming Systems				
Strategy: Integrated solutions for sustainable sugarcane production				
BSS257	GrubPlan 2: Developing improved risk assessment and decision-support systems for managing greyback canegrub	BSES Ltd	Dr Peter Samson	$50,000
BSS266	Optimum canegrub management within new sustainable cropping systems	BSES Ltd	Dr Peter Samson	$158,525

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
BSS268	Accelerated adoption of best-practice nutrient management	BSES Ltd	Dr Bernard Schroeder	$280,427
BSS269	A new cropping system for the Central District	BSES Ltd	Mr Bradley Hussey	$116,014
BSS286	Improved sugar-cane farming systems	BSES Ltd	Dr Alan Garside	$562,199
BSS294	Whole-farm planning for management of varieties to maximise productivity and reduce losses from diseases	BSES Ltd	Mr Barry Croft	$194,055
BSS297	Delivering web-based irrigation management	BSES Ltd	Mr Tony Linedale	$95,000
CG009	Investigating opportunities for a grain and legume industry in a coastal sugarcane cropping regime	CANEGROWERS — Isis	Ms Judy Plath	$0
CSE011	Improved environmental outcomes and profitability through innovative management of nitrogen	CSIRO Sustainable Ecosystems	Dr Peter Thorburn	$286,337
CSE012	Adopting systems approaches to water and nutrient management for future cane production in the Burdekin	CSIRO Sustainable Ecosystems	Dr Peter Thorburn	$225,514
GGP003	Implementation of controlled traffic farming of sugarcane in the Herbert River district	Pinnacle Precision Farming	Mr Ed Morris	$5,125
GGP004	Implementation of improved sugarcane farming systems in the Clare area of the Burdekin District	Mulgrave Integrated Group	Mr Paul Hatch	$1,000
GGP006	Precision farming with controlled traffic and GPS guidance system	Septimus Farming Groups	Colin and Georgina Vassallo	$40,000
GGP007	Controlled traffic farming systems for the North Coast Grower Group	Mackay Area Productivity Services	Mr John Fox	$19,000
GGP009	Implementing zero-till planting systems in the NSW sugar industry	NSW Farming Systems Group	Mr Alan Munro	$5,000
GGP010	Accurate, consistent bed forming to promote better farming practices	MAD Cane Planting	Mr Anthony Durrington	$1,000
GGP012	Researching soil health and economics of two farming systems in the Herbert River district	New Farming Initiative Group	Mr Michael Waring	$25,700
GGP019	Increasing productivity and profitablity in soldierfly-affected crops in the Pioneer Valley	Cattle Creek Soldierfly Group	Mr Paul Argent	$34,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
GGP028	Facilitating enhanced peanut/sugarcane rotations by assessing and managing the issues related to growing peanuts	Sustainable Sugar and Peanut Agriculture Pty Ltd	Mr Don Halpin	$13,500
IBS002	Specialist grower groups enhancing BMP packaging & adoption in Innisfail & Babinda districts	Innisfail Babinda Cane Productivity Services Ltd	Mr Bill Horsford	$20,000
MAF002	Evaluating alternative irrigation for a greener future	Mulgrave Area Farm Integrated Action	Mr Chris Hesp	$89,220
PCS002	Enhancing trap cropping techniques for greyback canegrub in rain-fed cane	Plane Creek Productivity Services Ltd.	Mr Mark Beech	$0
WAA003	Evaluation and Implementation of modified farming systems in the ORIA	Department of Agriculture Western Australia	Dr Joe Sherrard	$98,633
YDV002	Sugar Yield Decline Joint Venture (Phase 2)	BSES Limited	Dr Alan Garside	$30,000
Program C: Distribution Systems				
Strategy: Enhancing capability in processing and distribution systems				
QUT004	Commercial evaluation of alternative juice clarification processes	Queensland University of Technology	Dr William Doherty	$43,142
QUT011	Factory trials with a novel cleaning formulation	Queensland University of Technology	Dr William Doherty	$11,259
SRI123	Crystallisation studies in a pilot batch vacuum pan	Sugar Research Institute	Dr Ross Broadfoot	$50,000
SRI134	Low moisture mill mud for more cost effective return to cane fields	Sugar Research Institute	Mr Rod Steindl	$11,262
Program C: Distribution Systems				
Strategy: Innovative technology and best management practices				
BSS270	Regional adoption of alternative harvester configurations for sustainable harvesting efficiency	BSES Ltd	Mr Cam Whiteing	$169,180
CRC007	Bioactive natural products from sugarcane	CRC Sugar Industry Innovation through Biotechnology	Associate Prof David Leach	$50,000
GGP011	Develop a whole-of-crop load levelling arm	Condong Cane Farmers R&D	Mr Mark North	$16,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
HGP003	Modified rotary-pinch chopper system for improved harvesting efficiency	Bundaberg Sugar Ltd	Mr Mike Smith	$32,000
HGP005	Develop and assess adaptability of different row spacings for harvester fronts	Linton & Walsh	Mr Joe Linton	$16,000
HGP009	Electronic logbook for harvest record keeping	Murray Harvesting Pty Ltd	Mr Brian Dore	$1,500
NSC012	Single drum harvester chopper development	New South Wales Sugar Milling Co-operative Ltd	Dr Bruce Lamb	$50,000
QUT005	Determination of factory benefits from full implementation of syrup clarification	Queensland University of Technology	Mr Rod Steindl	$20,702
QUT012	Improving the cost-effectiveness of mud filtration through modern technology	Queensland University of Technology	Dr Ross Broadfoot	$84,686
QUT019	Improved train safety through improved locomotive braking performance	Queensland University of Technology	Dr Geoff Kent	$0
SRI136	Low cost and energy efficient ambient drying of large-scale bagasse and trash stockpiles for increased industry income from power generation	Sugar Research Institute	Dr Phil Hobson	$40,457
SRI141	A preliminary assessment of methods to measure in-field sugar loss	Sugar Research Institute	Dr William Doherty	$16,636
Program C: Distribution Systems				
Strategy: Diversifying the income stream				
QUT008	Analysis of bagasse and trash utilisation options	Queensland University of Technology	Dr Phil Hobson	$22,970
QUT015	Pilot scale development and evaluation of an improved process for furfural and fuel production from bagasse	Queensland University of Technology	Dr Les Edye	$0
QUT016	High value products from furfural waste residue	Queensland University of Technology	Dr William Doherty	$17,000
SRD005	Bagasse and Trash Utilisation Workshop	Sugar Research and Development Corporation	Dr Les Robertson	$22,216

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
Program D: Industry Capacity				
Strategy: Enhancing capacity to learn and change				
ABC002	Developing a learning culture within ABC.	Advanced Burdekin Collective Research Inc	Mr Bryan Granshaw	$2,000
ABC003	Grower Innovation Virtual Expo	Advanced Burdekin Collective Research Inc	Mr Andrew Lashmar	$3,382
ABC004	A learning experience to adopt overlap cropping of beans and cane	Advanced Burdekin Collective Research Inc	Mr Joe Linton	$2,000
AFF001	Corporate governance for rural women	Australian Government Department of Agriculture, Fisheries and Forestry	Dr Diana Maldonado	$1,000
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	Mr Dennis Shore	$4,000
BSS278	Sugar industry training on community engagement	BSES Ltd	Mr Peter McGuire	$3,450
BSS283	Presentation of BMP variety workshops	BSES Ltd	Mr Tony Linedale	$0
BSS289	Everything you wanted to know about cane payment but were too afraid to ask — information workshops for female business partners in the sugar industry	BSES Ltd	Mr Drew Burgess	$1,680
BSS290	A review of key sugarcane crop improvement and pathology research in India to identify collaboration and germplasm exchange opportunities	BSES Ltd	Dr Nils Berding	$8,000
BSS291	Travel for keynote speakers to attend the Queensland Best Practice Harvesting workshops	BSES Ltd	Mr Lawrence DiBella	$0
BSS292	Investigating marketing strategies and alternative cropping by the Mackay District Young Farmers Group	BSES Ltd	Mr Joe Muscat	$2,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
BSS293	Mackay district grower group leaders and young farmers attendance at 2006 ASSCT Conference	BSES Ltd	Mr Joe Muscat	$500
BSS298	Share farming options for the Australian sugar industry	BSES Ltd	Mr Peter McGuire	$4,500
BSS299	Improving governance, processes and R&D outcomes in the Australian sugar industry	BSES Ltd	Dr Peter Allsopp	$5,000
BSS300	Feasibility of acoustic detection of canegrubs for better management decisions	BSES Ltd	Dr Peter Samson	$5,000
BSS301	Farmers sharing their farming system story with the world and learning from other farmers in South Africa	BSES Ltd	Mr Peter McGuire	$8,000
BSS310	Application for Nathalie Piperidis to attend the Plant and Animal Genome (PAG) XVI conference in San Diego, CA, USA in 2008	BSES Ltd	Dr Nathalie Piperidis	$0
CG014	Enhancing the Isis women in sugar group's knowledge and capacity to address industry issues	CANEGROWERS Isis	Ms Nicole Kirk	$0
CG019	Queensland sugarcane farmers — Their lives and stories through photographs	CANEGROWERS	Ms Suzi Moore	$4,000
CGH001	Where are the women?	CANEGROWERS Herbert River	Ms Sherry Kaurila	$37,175
CGK001	Enabling the Burdekin sugar industry to adapt to change through improved communication and capacity building programs	Burdekin Regional Advisory Group	Ms Terri Buono	$10,000
CIS001	Sugarcane smut technical & strategic development tour to the Ord River	Isis Productivity Ltd	Mr Wayne Stanley	$10,000
CIS002	Lessons from the US: exploring the US/Canada soybean and alternative fuels industries to identify opportunities for the Australian sugar industry	Isis Productivity Ltd	Ms Judy Plath	$8,000
CKA001	A capacity building study tour for members of the Kalamia Cane Growers Organisation Limited Young Farmers Group	Kalamia Cane Growers Organisation Ltd	Mr Panikos Spyrou	$10,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
CMC001	CANEGROWERS' strategy for women and teams	Catherine McGowan Consulting	Ms Cathy McGowan	$46,230
CMY001	Increasing WHS awareness and knowledge in the Queensland cane growing industry	CANEGROWERS Mackay	Mr Jim Kirchner	$8,000
CPI012	Travel to the 2007 Plant and Animal Genome XV conference in San Diego	CSIRO Plant Industry	Dr Karen Aitken	$2,386
CQU005	Farm size and production on Queensland sugarcane farms	Central Queensland University	Dr J McAllister	$1,000
CSE016	Sugar communities and resilience to change: Opportunities for enhancing women's participation in sustainability initiatives	CSIRO Sustainable Ecosystems	Dr Emma Jakku	$52,139
CSR035	Soils and irrigation workshops — training for farmers and trainers	CSR Sugar	Dr Lisa McDonald	$2,160
CSR037	Improving the skills of CPI facilitators to interact with grower groups	CSR Sugar	Dr Lisa McDonald	$2,000
CSR039	Travel to Brazil and Cuba to understand and evaluate a systems approach to harvesting automation and precision agriculture (PA1)	CSR Sugar	Dr Andrew Wood	$10,000
CSR040	Travel to Australia for Tech-Agro engineers to install and evaluate harvester automation and precision agriculture	CSR Sugar	Dr Lisa McDonald	$9,800
CTB001	Building the capacity of Tableland cane growers to prepare successful project submissions	CANEGROWERS Tableland	Ms Bronwyn Francis	$6,800
DHC001	Innovating and Developing Human Capacity in Rural Industries (joint RDC program)	Rural Industries Research & Development Corporation	Dr Diana Maldonado	$40,000
FMS003	Farm Management Systems for the Sugarcane Industry, Sub-program 3: FMS training course	AGRECON	Mr Simon Holloway	$108,545
GGP002	Development of an integrated wallaby management strategy	Barron Delta Farming Group	Mr Mick Andrejic	$34,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
GGP014	Better financial and operational decision making in grower owned farming/ harvesting businesses	Burdekin Harvesting for Farming Group	Mr Ian Haigh	$0
GGP015	Development of a precision mill mud applicator for a new farming system	Maryborough Advanced Growers Group	Mr Jeff Atkinson	$21,000
GGP017	Improving soil health in undulating, dryland farms in the Central region	Conningsby Dryland Farmers Group	Mr Rino De Boni	$18,000
GGP018	Nutrient management from variable rate technology in a control traffic system by the Oakenden Grower Group	Oakenden Grower Group	Mr John Muscat	$0
GGP020	Beach sand to black clay — Adapting technology and best practice for Homebush farming conditions	Homebush Innovative Farmers Group	Mr Tony Bugeja	$30,000
GGP021	Bed forming utilising GPS guidance by the CAS (Calen and St Helen) Young Farmers Association	Calen and St Helens (CAS) Young Farmers Association	Mr Colin Mackenzie	$30,000
GGP022	Optimising benefits of GPS integration into controlled traffic farming (CTF) system	Deguara Harvesting	Mr Gerry Deguara	$20,000
GGP023	Utilising available technology to better manage yield variability within blocks	Blackburn Harvesting Group	Mr Lee Blackburn	$17,375
GGP024	Validation of fibre cropping in rotation with sugar cane by Mackay Fibre Producers	Mackay Fibre Producers	Mr Joe Muscat	$35,000
GGP025	Providing differing planting options to growers in Far North Queensland	Marano Planting Group	Mr Joseph Marano	$0
GGP026	Implementation of a 2M farming system	Singh Harvesting Group	Mr Rajinder Singh	$18,000
IBS003	Innisfail/Babinda harvester contractors travel to the Herbert	Innisfail Babinda Cane Productivity Services Ltd	Mr Bill Horsford	$0
IBS004	Innisfail/Babinda growers studying the diversification of cane producers in the Mossman and Atherton Tablelands mill regions	Innisfail Babinda Cane Productivity Services Ltd	Mr Bill Horsford	$4,520

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
JCU028	Short scale movement of the island cane planthopper, Eumetopina flavipes, the vector of Ramu Stunt Disease of sugarcane	James Cook University	Ms Kylie Anderson	$5,000
LDI001	Developing the leadership capacity of the Australian Sugar Industry	Leading Industries	Ms Cheryl Phillips	$116,639
LDI002	Building the capacity of Generation Next stakeholders to position them to make a positive contribution to the Sugar Industry's future	Leading Industries	Ms Cheryl Phillips	$106,900
MAP001	Papua New Guinea pest and disease study tour by MAPS people	Mackay Area Productivity Services	Mr Allan Royal	$0
MAS003	Mossman representatives participating in the 2006 APEN and ASSCT Conferences	Mossman Agricultural Services	Mr Daryl Parker	$0
MAS004	To achieve a greater awareness of future farming for Mossman next generation farmers	Mossman Agricultural Services	Mr Gerard Puglisi	$6,950
MSA004	Attend ISSCT Workshop on Co-products in Brazil in November 2006	Mackay Sugar Cooperative Association Ltd	Dr Bryan Lavarack	$4,980
MSA005	Value chain management learning at ISSCT 2007	Mackay Sugar Cooperative Association Ltd	Mr Geoff Fleming	$5,000
MSF003	Training for Maryborough growers in optimising performance and scheduling of centre pivots (Maryborough Pivot Week)	Maryborough Sugar Factory	Mr Andrew Dougall	$4,885
MSF004	Maryborough Sugar industry participating in the 5th Controlled Traffic Farming & Precision Agriculture Conference 2007	Maryborough Sugar Factory	Dr Yolande Lambert	$5,005
NCT001	Learning about a farmer friendly EMS	New South Wales Canegrowers Council	Mr Robert Quirk	$8,300
NCT002	Travel to ISSCT Congress in Durban, and visit the Noodsberg mill area to discuss their successful EMS system	New South Wales Canegrowers Council	Mr Robert Quirk	$4,450

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
NFS001	Increasing the knowledge of raised bed farming by the NSW farming systems group	NSW Farming Systems Group	Mr Alan Munro	$7,500
NSC011	Bringing together innovative engineers from the NSW and Northern/Central regions	New South Wales Sugar Milling Co-operative Ltd	Mr David Moller	$0
NSC013	NSW farmers and mill technologists learning and sharing at the 2007 ASSCT conference	New South Wales Sugar Milling Co-operative Ltd	Mr Rick Beattie	$5,800
QUT009	Workshops for sugar factory staff to explore opportunities for increased revenues, efficiencies and reduced operational and maintenance costs	Queensland University of Technology	Dr Ross Broadfoot	$0
QUT017	Appraising the latest developments in extraction technologies through attendance at ISSCT Engineering Workshop	Queensland University of Technology	Dr Geoff Kent	$4,533
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	Mr Darryn Rackemann	$5,000
RDA002	Grower Group Awards		Dr Tracy Henderson	$1,000
RDA005	Fostering and rewarding an innovation culture in the Australian sugar industry	Sugar Research and Development Corporation	Mrs Claire Power	$115,320
RED001	Redtrail commercial scale harvesting capacity building & efficiency project	Redtrail Pty Ltd	Mrs Coral Zunker	$9,900
REL001	Building grower capacity in steps	Roberts Evaluation Pty Ltd	Dr Kate Roberts	$37,825
SCU002	Participation in the Society for Medicinal Plant Research Conference, 2–6 September, 2007	Southern Cross University	Mrs Dionne Payn	$0
SRD013	Review of SRDC investment in Travel and Learning Opportunity Projects (TLOP)	Sugar Research and Development Corporation	Mrs Ingrid Roth	$45,000
SRD018	People Development specialist workshop	Sugar Research and Development Corporation	Dr Tracy Henderson	$49,333
TCG001	Workshop on wide-swath harvesting	G J Deguara Family Trust	Mr Gerry Deguara	$0

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
UQ041	Participation at the Soil and Water Conservation Society Conference — Colorado USA	University of Queensland	Mr Peter Wulf	$5,000
UQ042	Travel by Alex Whan to attend the XV Plant and Animal Genome Conference	University of Queensland	Mr Alex Whan	$2,272
Program D: Industry Capacity				
Strategy: Targeted continuing education				
AFF002	Science and Innovation Awards for Young People	Australian Government Department of Agriculture, Fisheries and Forestry	Mrs Claire Power	$30,000
AU002	Participate in the international conference on lepidopterous stemborers	The University of Adelaide	Ms Katherine Muirhead	$0
BSS279	Improving extension capacity	Bureau of Sugar Experimental Stations	Mr Dale Chapple	$1,205
CPI010	Accessing international expertise in sugarcane biotechnology	CSIRO Plant Industry	Dr John Manners	$2,000
CSE015	Nitrogen management controls in the EU and USA — Lessons for the Australian sugar industry	CSIRO Sustainable Ecosystems	Dr Peter Thorburn	$0
QUT003	An integrated pest management strategy for climbing rat in the far-north Queensland sugarcane production system	Queensland University of Technology	Dr Susan Fuller	$37,712
QUT006	The 2006 Appita Conference — value adding of bagasse	Queensland University of Technology	Mr Tom Rainey	$0
SRD003	Generation Next Forum		Dr Tracy Henderson	$158
SRD019	Building the presentation and media skills of SRDC Scholarship students	Sugar Research and Development Corporation	Dr Diana Maldonado	$9,788
STU031	H Fengdou — Improved selection systems and data analysis for sugarcane breeding	The University of Queensland	Prof Kaye Basford	$0
STU042	K Ritter — An investigation of the genetic, biochemical and molecular basis of sugar accumulation in sugarcane	The University of Queensland	Dr Ian Godwin	$0

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
STU050	Mira Durr — Microbiology of acid sulfate soils in agricultural environments	Australian National University	Prof Ian White	$16,000
STU052	Kylie Anderson — Invasion potential of Eumetopina flavipes, vector of Ramu Stunt Disease of Sugarcane	James Cook University	Dr Bradley Congdon	$63,823
STU053	Su Yin Tan — Studies on bagasse fractionation using ionic liquids	Sugar Research Institute	Prof Doug MacFarlane	$32,000
STU054	Matthew James — Integrating the harvest, transport and milling value chain by implementing a novel data infrastructure and decision support system	Queensland University of Technology	Dr Duncan Campbell	$19,000
STU055	Karen Benn — The motivators and barriers to the adoption of more sustainable farming practices	James Cook University	Dr Janice Elder	$20,000
STU056	Kenji Osabe — Development and application of a mature stem specific promoter in sugarcane	The University of Queensland	Dr Robert Birch	$32,000
STU057	Tom Rainey — Improved bagasse fibre properties for the manufacture of paper, board and composite materials	Queensland University of Technology	Dr William Doherty	$35,000
STU058	Jane Churchill — Rapid screening tools for smut reaction in sugarcane varieties	Queensland University of Technology	Dr Serge Kokot	$32,000
STU059	Anna Satje — Improving the cation retention capacity of cane-growing soils using high activity clays	James Cook University	Dr Paul Nelson	$57,335
STU060	Felicity Atkin — Estimates of breeding value of sugarcane clones and their impact on efficient parent management and cross pollination	BSES Limited	Dr Joanne Stringer	$6,000
STU061	Palmina Bonaventura — Communicate to advance and innovate	BSES Limited	Dr Peter Allsopp	$6,560
STU062	Henry Thomas — Making database application development as straight forward as building spreadsheets	The University of Southern Queensland	Dr John Leis	$16,000

Project	Title	Lead Organisation	Research Contact	Funds (2006–07)
Program D: Industry Capacity				
Strategy: Promoting safe healthy workplaces				
OHS002	Farm Health and Safety R&D Program 2002–2006	Rural Industries Research & Development Corporation	Dr Diana Maldonado	$20,000
Program D: Industry Capacity				
Strategy: More effective coordination of R&D activities				
CSE017	SREMS (Sugarcane Research Experiment Management System)	CSIRO Sustainable Ecosystems	Dr Sarah Park	$52,049
FMS005	FMS program 5. Evaluation of FMS	AGRECON	Dr Lisa McDonald	$15,914
GGP001	Group Innovation Projects liaison and support	Sugar Research and Development Corporation	Dr Les Robertson	$68,263
SRD006	Building capacity of Grower Group project participants	Sugar Research and Development Corporation	Dr Les Robertson	$94,783
SRD010	Development of R&D Plan 2007–2012	Sugar Research and Development Corporation	Dr Russell Muchow	$75,013
SRD014	Review of SRDC Scholarships	Sugar Research and Development Corporation	Dr Tracy Henderson	$13,200
SRD020	Enhanced availability of project outcomes and resources	Sugar Research and Development Corporation	Mrs Claire Power	$18,692
SRI140	Documenting changes in the performance of the Australian sugar industry milling sector 2003–2008	Sugar Research Institute	Dr Geoff Kent	$0

Appendix D

Final Reports Approved 2006–07

Project	Title	Lead Organisation	Research Contact
Program A: Value Chain Integration			
CSE019	Global change: helping inform the Australian sugar industry on potential impacts, possible adaptation strategies and best-bet investment of R&D	CSIRO Sustainable Ecosystems	Dr Sarah Park
HGP001	Establishing a million tonne harvesting co-operative	Richmond River Cane Growers' Association Ltd	Mr Andrew Tickle
HGP006	Improved harvesting efficiency in farming systems	Tabone Harvesting — Group No. 131	Mr Brian Tabone
LWA001	Rural industries and carbon trading	Land and Water Australia	Dr Diana Maldonado
NSC006	Achieving world's best practice harvesting and transport costs for the NSW sugar industry	New South Wales Sugar Milling Co-operative Ltd	Mr Rick Beattie
Program B: Farming Systems			
BSS122	Nutrients and pesticides in surface drainage water and soil under irrigated sugarcane	BSES Limited	Mr Gary Ham
BSS256	Reducing the Australian sugar industry's genetic vulnerability to sugarcane smut	BSES Limited	Mr Barry Croft
CRC002	Application of molecular markers to sugarcane breeding	CRC for Sugar Industry Innovation through Biotechnology	CRC for Sugar Industry Innovation through Biotechnology
CSE007	Implementation of irrigation practices for profitable resource efficient sugarcane production in the Ord	CSIRO Sustainable Ecosystems	Dr Geoff Inman-Bamber
CSE018	Precision Agriculture — An avenue for profitable innovation in the Australian sugar industry, or expensive technology we can do without	CSIRO Sustainable Ecosystems	Dr Rob Bramley
FMS008	Farm health and safety tools for the Sugar FMS framework	AGRECON	Mr Don Chambers
GGP003	Implementation of controlled traffic farming of sugarcane in the Herbert River district	Pinnacle Precision Farming	Mr Ed Morris
GGP006	Precision farming with controlled traffic and GPS guidance system	Septimus Farming Groups	Colin and Georgina Vassallo

Project	Title	Lead Organisation	Research Contact
GGP009	Implementing zero-till planting systems in the NSW sugar industry	NSW Farming Systems Group	Mr Alan Munro
GGP010	Accurate, consistent bed forming to promote better farming practices	MAD Cane Planting	Mr Anthony Durrington
MAF001	Irrigation runoff event monitoring	Mulgrave Area Farm Integrated Action	Mr Chris Hesp
NCA009	Review, analysis and discussion of Precision Agriculture technologies	National Centre for Engineering in Agriculture	Mr Rod Davis
YDV002	Sugar Yield Decline Joint Venture (Phase 2)	BSES Limited	Dr Alan Garside
Program C: Distribution Systems			
QUT008	Analysis of bagasse and trash utilisation options	Queensland University of Technology	Dr Phil Hobson
SRI123	Crystallisation studies in a pilot batch vacuum pan	Sugar Research Institute	Dr Ross Broadfoot
SRI134	Low moisture mill mud for more cost effective return to cane fields	Sugar Research Institute	Mr Rod Steindl
SRI136	Low cost and energy efficient ambient drying of large-scale bagasse and trash stockpiles for increased industry income from power generation	Sugar Research Institute	Dr Phil Hobson
SRI137	Factory trial of modified long life roll shell surface	Sugar Research Institute	Dr Geoff Kent
SRI138	Increase the energy efficiency and revenue of sugar factories	Sugar Research Institute	Dr Ross Broadfoot
SRI141	A preliminary assessment of methods to measure in-field sugar loss	Sugar Research Institute	Dr William Doherty
Program D: Industry Capacity			
ABC003	Grower Innovation Virtual Expo	Advanced Burdekin Collective Research Inc	Mr Andrew Lashmar
ABC004	A learning experience to adopt overlap cropping of beans and cane	Advanced Burdekin Collective Research Inc	Mr Joe Linton
BSS278	Sugar industry training on community engagement	BSES Limited	Mr Peter McGuire
BSS279	Improving extension capacity	BSES Limited	Mr Dale Chapple
BSS283	Presentation of BMP variety workshops	BSES Limited	Mr Tony Linedale

Project	Title	Lead Organisation	Research Contact
BSS289	Everything you wanted to know about cane payment but were too afraid to ask — information workshops for female business partners in the sugar industry	BSES Limited	Mr Drew Burgess
BSS291	Travel for keynote speakers to attend the Queensland Best Practice Harvesting workshops	BSES Limited (on behalf of the Herbert Industry Harvesting Best Practice team)	Mr Lawrence DiBella
BSS292	Investigating marketing strategies and alternative cropping by the Mackay District Young Farmers Group	BSES Limited	Mr Joe Muscat
BSS293	Mackay district grower group leaders and young farmers attendance at 2006 ASSCT Conference	BSES Mackay/ MAPS (Mackay Area Productivity Services)	Mr Joe Muscat
CG014	Enhancing the Isis women in sugar group's knowledge and capacity to address industry issues	CANEGROWERS Isis	Ms Nicole Kirk
CIS001	Sugarcane smut technical & strategic development tour to the Ord River	CANEGROWERS Isis	Mr Wayne Stanley
CGK001	Enabling the Burdekin sugar industry to adapt to change through improved communication and capacity building programs	Burdekin Regional Advisory Group	Ms Terri Buono
CKA001	A capacity building study tour for members of the Kalamia Cane Growers Organisation Limited Young Farmers Group	Kalamia Cane Growers Organisation Ltd	Mr Panikos Spyrou
CPI012	Travel to the 2007 Plant and Animal Genome XV conference in San Diego	CSIRO Plant Industry	Dr Karen Aitken
CSE015	Nitrogen management controls in the EU and USA — Lessons for the Australian sugar industry	CSIRO Sustainable Ecosystems	Dr Peter Thorburn
CSR035	Soils and irrigation workshops — training for farmers and trainers	CSR Sugar	Dr Lisa McDonald
CSR037	Improving the skills of CPI facilitators to interact with grower groups	CSR Sugar	Dr Lisa McDonald
CSR039	Travel to Brazil and Cuba to understand and evaluate a systems approach to harvesting automation and precision agriculture (PA1)	CSR Sugar	Dr Andrew Wood
CSR040	Travel to Australia for Tech-Agro engineers to install and evaluate harvester automation and precision agriculture	CSR Sugar	Dr Lisa McDonald

Project	Title	Lead Organisation	Research Contact
DPI018	FNQ grower farming systems tour of Southern QLD & Northern NSW	Queensland Department of Primary Industries & Fisheries	Mr Neil Sing
FMS003	Farm Management Systems for the Sugarcane Industry, Sub-program 3: FMS training course	AGRECON	Mr Simon Holloway
IBS004	Innisfail/Babinda growers studying the diversification of cane producers in the Mossman and Atherton Tablelands mill regions	Innisfail Babinda Cane Productivity Services Ltd	Mr Bill Horsford
MAS003	Mossman representatives participating in the 2006 APEN and ASSCT Conferences	Mossman Agricultural Services	Mr Daryl Parker
MAS004	To achieve a greater awareness of future farming for Mossman next generation farmers	Mossman Agricultural Services	Mr Gerard Puglisi
MSA004	Attend ISSCT Workshop on Co-products in Brazil in November 2006	Mackay Sugar Cooperative Association Ltd	Dr Bryan Lavarack
MSF003	Training for Maryborough Growers in Optimising Performance and Scheduling of Centre Pivots (Maryborough Pivot Week)	Maryborough Sugar Factory	Mr Andrew Dougall
NCT001	Learning about a farmer friendly EMS	New South Wales Canegrowers Council	Mr Robert Quirk
QUT017	Appraising the latest developments in extraction technologies through attendance at ISSCT Engineering Workshop	The University of Queensland	Dr Geoff Kent
RED001	Redtrail Commercial Scale Harvesting Capacity Building and Efficiency Project	Redtrail Pty Ltd	Mrs Coral Zunker
SRD006	High Noon Workshop	Sugar Research and Development Corporation	Dr Les Robertson
SRD013	Review of SRDC investment in Travel and Learning Opportunity Projects (TLOP)	Sugar Research and Development Corporation	Dr Les Robertson
TCG001	Workshop on wide-swath harvesting	G J Deguara Family Trust	Mr Gerry Deguara
UQ041	Participation at the Soil and Water Conservation Society Conference — Colorado USA	The University of Queensland	Mr Peter Wulf
UQ042	Travel by Alex Whan to attend the XV Plant and Animal Genome Conference	The University of Queensland	Mr Alex Whan

Appendix E

Published Papers

Journal Papers

Grof, CPL, Albertson, PL, Bursle, J, Perroux, JM, Bonnett, GD, and Manners, JM (2007). Sucrose-Phosphate Synthase, a Biochemical Marker of High Sucrose Accumulation in Sugarcane. Online

Bell, MJ, Stirling, GR and Pankhurst, CE (2006). The impact of management on the health of soils supporting the Australian grain and sugar industries. Soils and Tillage Research (in press)

Blair, BL and Stirling, GR (2006). The role of plant-parasitic nematodes in reducing yield of sugarcane in fine-textured soils in Queensland, Australia. Australian Journal of Experimental Agriculture

Braunack, MV, Magarey, RC and Garside, AL (2007). Reduced tillage planting and the longterm effects on soil borne pests and diseases and yield of sugarcane (Saccharum officinarum) in Queensland, Australia. Soil and Tillage Research (submitted).

Braunack, MV and McGarry, D (2006). Traffic control and tillage strategies for harvesting and planting of sugarcane (Saccharum officinarum) in Australia. Soil and Tillage Research 89: 86–102

Brumbley, SM, Petrasovits, LA, Hermann, SR, Young, AJ and Croft, BJ (2006). Recent advances in the molecular biology of Leifsonia xyli subsp. xyli, causal organism of ratoon stunting disease. Australian Plant Pathology Vol **35**: 681–689

Everingham, YL, Clarke, AJ, Van Gorder, S. Long lead rainfall forecasts for the Australian Sugar Industry. International Journal of Climatology. (In press).

Inman-Bamber, NG, Attard, SJ, Verrall, SA, Webb, WA, Baillie, C (2007). A web-based system forscheduling irrigation in sugarcane. Proc. Int. Soc. Sugar Cane Technol. (In press).

Samson, PR (2007). Farming practices for managing *Inopus rubriceps* (Diptera: Stratiomyidae) in sugarcane in Australia. Crop Protection, 983–990.

Schroeder, BL, Wood, AW, Hardy, S, Moody, PW and Panitz, JH (2006). Soil Specific nutrient management guidelines for sugarcane production in the Proserpine district. *BSES Limited Technical Publication TE04003*, BSES Limited, Indooroopilly, 56pp.

Proccedings of the Australian Sugar Cane Technologisits 2007 Papers

Anderson, KL, Sallam, M and Congdon, BC (2007). Long distance dispersal by *Eumetopina Flavipes* (*Hemiptera: Delphacidae*), vector of Ramu stunt: is culture contributing? Vol **29**: 226–234.

Broadfoot, R and Dunn, KG (2007). Assessing the effect of juice properties and operating conditions on the heat transfer in Roberts evaporators. Vol **29**: 401–410.

Bonnett, GD, Berding, N, Morgan, T and Fitzgerald, P (2007). Implementation of genetically modified sugarcane — the need for a better understanding of sexual reproduction. Vol **29**: 258–266.

Di Bella, LP, Rixon, C, Armytage, P, Davies, B, Dorahy, K, Wood, AW and Sheedy, P (2007). The 2006 Herbert Moddus ® pilot program. Vol **29**: 368–376.

Ensbey, NJ, Beattie, RN, North, MJ, Aitken, RL and McGuire, PJ (2007). Researching and implementing farming systems in the NSW sugar industry. Vol **29**: 71–78.

Everingham, YL, Clarke, AJ, Chen, CCM, Van Gorder, S and McGuire, PJ (2007). Exploring the capabilities of a long lead climate forecasting system for the NSW sugar industry. Vol **29**: 9–17.

Garside, AL and Bell, MJ (2007). The value of legume breaks to the sugarcane cropping system-cumulative yields for the next cycle, potential cash returns from the legume, and duration of the break effect. Vol **29**: 299–308.

Hurney, AP, Grace, D and Garside, AL (2007). Effect of direct drill planting into raised beds on cane growth and yield under rainfed conditions in North Queensland. Vol **29**: 290–298.

Inman-Bamber, NG (2007). Economic impact of water stress on sugar production in Australia. Vol **29**: 167–175.

Jackson, P, Chapman, S, Rattey, A, Wei, X and Cox, M (2007). Genotype X region interactions and implications for sugarcane breeding programs. Vol **29**: 122–130.

Jakku, E, Thorburn, P, Everingham, YL and Inman-Bamber, NG (2007). Improving the participatory development of decision support systems for the sugar industry. Vol **29**: 41–49.

Park, SE, Jackson, P, Berding, N and Inman-Bamber, NG (2007). Conventional breeding practices within the Australian sugarcane breeding program. Vol **29**: 113–121.

Schroeder, BL, Hubert, JW, Hubert, C, Hubert, FG, Panitz, JH, Wood, AW and Moody, PW (2007). Recognising difference in soil type to guide nutrient inputs on-farm — a case study from Bundaberg. Vol **29**: 138–148.

Stirling, GR, Moody, P and Stirling, AM (2007). The potential of nematodes as an indicator of the biological status of sugarcane soils. Vol **29**: 339–351.

Thorburn, PJ, Webster, AJ, Biggs, IM, Biggs, JS, Park, SE and Spillman, MF (2007). Towards innovative management of nitrogen fertiliser for a sustainable sugar industry. Vol **29**: 85–96.

SRDC Technical Publications

SRDC Technical Report 2/2006 Analysis of Bagasse and Trash Utilisation Options

SRDC Technical Report 1/2007 Research and Development Strategies to Advance the Australian sugarcane industry

SRDC Statutory Publications

SRDC Annual Report 2005–06

SRDC Annual Operational Plan 2006–07

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 also appears in various industry publications;
- eNews — a monthly update sent via a subscription list (editions 1–13);
- media releases — issued regularly.

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 2006–07

FOI requests received	1
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
Brisbane Qld 4000
Telephone: (07) 3210 0495
Facsimile: (07) 3210 0506
Email: srdc@srdc.gov.au

Appendix G

Abbreviations

ACFA	Australian Cane Farmers' Association
ACGC	Australian Cane Growers' Council
ASSCT	Australian Society of Sugarcane Technologists
DAFF	Australian Government Department of Agriculture Fisheries and Forestry
DAFWA	Department of Agriculture and Food, Western Australia
AOP	Annual Operational Plan
ASMC	Australian Sugar Milling Council Proprietary Limited
ASSCT	Australian Society of Sugar Cane Technologists
BPMS	Business Process Management System
BSES	BSES Limited
CAC Act	Commonwealth Authorities and Companies Act 1997
CCS	Commercial Cane Sugar
CPPB	Cane Protection and Productivity Board
CP2002	Cross Program Activity CP2002
CRC	Cooperative Research Centre
CRCSIIB	Cooperative Research Centre for Sugar Industry Innovation through Innovation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
FEAT	Farm Economics Assessment Tool
FMS	Farm Management Systems
GGIP	Grower Group Innovation Project
GIS	Geographical Information System
GPS	Global Positioning Service
GVP	Gross Value of Production (of sugarcane)
HGIP	Harvester Group Innovation Project
IGG	Industry Guidance Group
IP	Intellectual Property
IPM	Integrated Pest Management
ISSCT	International Society of Sugar Cane Technologists
JCU	James Cook University
LWA	Land and Water Australia
MCV(P)	Managing Climate Variability (Program)
NSW	New South Wales
NSWSMC	New South Wales Sugar Milling Cooperative
OH&S	Occupational Health and Safety

ORIA	Ord River Irrigation Area
PBS	Portfolio Budget Statement
PIERD Act	Primary Industries and Energy Research and Development Act 1989
QDPI&F	Queensland Department of Primary Industries and Fisheries
QDNRM	Queensland Department of Natural Resources and Mines
QSL	Queensland Sugar Limited
QUT	Queensland University of Technology
R&D	Research and Development
RDC	Research and Development Corporations
RIRDC	Rural Industries Research and Development Corporation
SRDC	Sugar Research and Development Corporation
SRI@QUT	Sugar Research Institute at Queensland University of Technology
SYDJV	Sugar Yield Decline Joint Venture
TLOP	Travel and Learning Opportunity Project
UQ	University of Queensland
WIS	Women in Sugar

Appendix H

Table of compliance with publishing guidelines and legislation

	Page
Annual Operational Plan	70
Audit Committee	78
Auditor General's Certificate	84
Board Committees	78
Board Meetings	78
Australian Government Disability Strategy	82
Chair and Executive Director's Report	Section 3
Corporate Governance	70–74
Directors	75–77
Enabling Legislation	80
Ecologically Sustainable Development and Environmental Performance	81
Financial Statements	Section 6
Fraud Control	72
Freedom of Information	82
Government R&D Priorities	23–24
Index/Contents	Appendix I
Industry Representative Bodies	71
Insurance	72
Judicial Decisions and Reviews by Outside Bodies	Nil
Ministerial Directions	81
Objectives and Functions of SRDC	81
Occupational Health & Safety	82
Operational Problems	Nil
Organisational Structure	80
Patents	73
Principal Programs: Outputs and Outcomes	Section 4
Principal Programs: Performance	Section 4
Progress in Achieving Objectives	22

	Page
Publications	Appendix E
Report of Portfolio Operations	Section 4
Report of Corporate Operations	Section 5
Resolution of Directors	Letter of Transmission
Responsible Minister	71
R&D Activities	Section 4
R&D Plan	71
Selection Committee Annual Report	Nil
Significant Acquisitions/Disposals of Real Property	Nil
Significant Changes in State of Affairs	Nil
Significant Events (Section 15(1) of CAC Act)	Nil
Subsidiaries/Associated Companies	Nil

Appendix I

General Index