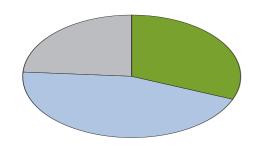
### Highlights of 2007–08

Table 1 Five years at a glance

	2007–08		2006-07	2005-06	2004–05	2003-04
GRDC						
Revenue	\$127.2m		\$98.6m	\$116.9m	\$111.2m	\$124.2m
Expenditure	\$102.5m	$\blacksquare$	\$118.2m	\$127.5m	\$120.2m	\$125.8m
Operating surplus/(deficit)	\$24.1m		(\$19.8m)	(\$10.6m)	(\$9.0m)	(\$1.6m)
Total assets	\$117.5m		\$106.0m	\$127.7m	\$135.7m	\$141.0m
Total equity	\$89.7m	<b>A</b>	\$65.6m	\$84.1m	\$94.7m	\$102.6m
Industry contributions	\$76.6m	_	\$50.9m	\$60.9m	\$64.2m	\$68.8m
Commonwealth contributions	\$37.6m	<b>A</b>	\$35.8m	\$43.1m	\$35.7m	\$42.3m
R&D expenses	\$89.1m	•	\$105.6m	\$116.1m	\$107.1m	\$114.3m
Employee benefits	\$5.8m	<b>A</b>	\$5.6m	\$5.2m	\$4.9m	\$4.6m
Suppliers	\$5.1m	_	\$5.1m	\$5.6m	\$5.8m	\$6.4m
Number of full-time GRDC staffa	47		44	50	46	43
Grains industry						
Estimated number of grain farms <sup>b</sup>	35,725	•	36, 417	37,122	37,841	38,574
Number of grain crops covered by R&D levies	25	_	25	25	25	25
Estimated gross value of production	\$7,524m	<b>A</b>	\$7,154m	\$8,613m	\$7,000m	\$9,800m
Total grain production— summer and winter crops	25,752,000t	<b>A</b>	19,204,000t	43,396,000t	37,288,000t	45,966,000t

Note: Figures for previous reporting periods have been restated in accordance with a new accounting policy regarding grant income.

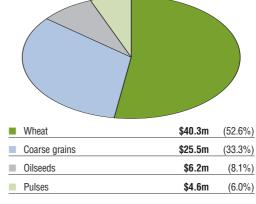
Figure 5 2007–08 R&D investment across the GRDC's three regions



■ Western Region	\$27.75m	(31.2%)
Southern Region	\$40.10m	(45.0%)
■ Northern Region	\$21.24m	(23.8%)

Source: GRDC Financial Statements 2007-08

Figure 6 Grain grower levy by crop type in 2007–08



Source: GRDC Financial Statements 2007-08

a Number of full-time GRDC staff as at 30 June each year.

b Australian Bureau of Agricultural and Resource Economics (ABARE) estimates for the total number of broadacre farms planting more than 30 hectares per year for grain production.

### Letter of Transmittal





15 October 2008

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

### Dear Minister

I have pleasure in presenting the annual report of the Grains Research and Development Corporation (GRDC) for the year ended 30 June 2008, in accordance with section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act) and section 28 of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act).

The GRDC is confident that its performance in 2007–08 contributed to the industry's and the government's vision for a profitable, internationally competitive and ecologically sustainable Australian grains industry. This achievement is consistent with the GRDC's responsibility to plan, execute and report against the:

- · objects of the PIERD Act as they apply to the GRDC
- planned outcomes of Prosperity through Innovation, the corporation's five-year Strategic R&D Plan 2007–12
- outcomes and outputs described in the annual operational plan and portfolio budget statements for 2007–08.

This annual report complies with the planning and reporting requirements prescribed by the CAC Act. GRDC directors are responsible for producing an annual report in accordance with the rules laid down in section 9 and Schedule 1 of the Act, including a 'Report of Operations' as defined in the Minister for Finance and Administration's Commonwealth Authorities and Companies (Report of Operations) Orders 2008.

The attached Report of Operations was made in accordance with a resolution of the corporation's directors on 29 September 2008 and, in my opinion, presents fairly the information required by the Minister's orders.

Yours sincerely

Keith Perrett Chairman

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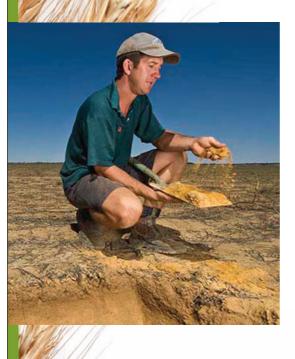
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A healthy barley crop. Photo: GRDC

## Part 1 Overview



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### About the GRDC

The Grains Research and Development Corporation (GRDC) was founded in 1990 under the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act).

The corporation has two key customer groups: Australian grain growers and the Australian Government. Its role is to invest in R&D and related activities to benefit grain growers, other grains industry participants and the wider community. In doing so, the GRDC invests in research where obstacles to the industry's progress exist and where R&D may be effective in overcoming such obstacles.

### This includes:

- investigating and evaluating the requirements for R&D in the grains industry
- · coordinating or funding R&D activities
- facilitating the dissemination, adoption and commercialisation of the results of R&D.

The GRDC determines its priorities in consultation with industry, government and research partners, and acts in partnership with public and private researchers, other R&D funding organisations, agribusiness and grower groups.

The GRDC is funded jointly by a levy collected from grain growers based on the value of grain they produce, and contributions from the Australian Government. The industry levy is collected on 25 crops, spanning temperate and tropical cereals, oilseeds and pulses.<sup>1</sup>

The GRDC's organisational structure and objectives recognise the complexities of the grains industry and its investment needs. Planning, delivering and communicating R&D outputs occurs in an environment that embraces governments, industry groups, research partners, other R&D investors and those operating in the industry itself—particularly Australian grain growers.



GRDC's National Panel being briefed by Kevin Roberts, Manager of Sandalwood Feedlot near Dalby, Qld. Sandalwood Feedlot has around 15,200 feeder cattle units. Photo: Rachel Bowman, Cox Inall

### **Organisational outcome**

In a dynamic environment, the GRDC addresses R&D priorities to meet national, regional, commodity and multicommodity challenges, in order to achieve the following overall outcome:

Through its commitment to innovation, an Australian grains industry that is profitable and environmentally sustainable for the benefit of the industry and wider community.

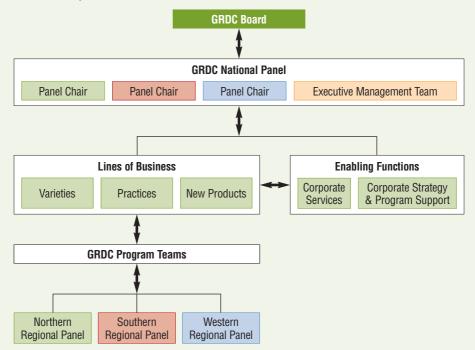
The outcome reflects the corporate vision in *Prosperity through Innovation*, the corporation's five-year Strategic Research and Development Plan 2007–12, and is consistent with the Department of Agriculture, Fisheries and Forestry's portfolio goal of achieving more sustainable, competitive and profitable Australian agricultural, fisheries, food and forestry industries.

<sup>1</sup> Leviable crops are: wheat; coarse grains—barley, oats, sorghum, maize, triticale, millets/panicums, cereal rye and canary seed; pulses—lupins, field peas, chickpeas, faba beans, vetch, peanuts, mung beans, navy beans, pigeon peas, cowpeas and lentils; and oilseeds—canola, sunflower, soybean, safflower and linseed. The levy for all crops is 0.99 percent of the net farm gate value of grain produced, except for maize, which is levied at 0.693 percent of net farm gate value.

### **Structure**

The organisational structure of the GRDC is shown in Figure 7.

Figure 7 GRDC structure, 2007-08



Note: For the purposes of performance reporting against the GRDC Annual Operational Plan 2007–08 and the Australian Government Department of Agriculture, Fisheries and Forestry Portfolio Budget Statements 2007–08, each line of business corresponds to an output group. The fourth output group, Communication & Capacity Building, is a combination of communication and capacity-building programs managed within the other three output groups.



Members of the GRDC Western Regional Panel on their 2007 Spring Tour at Esperance, WA: (left) Ralph Burnett, Julia Polkinghorne (Panel Support Officer), Philip Young (GRDC Board member), Neil Young (Panel Chair), Ben Curtin and Merrie Carlhausen.

Photo: GRDC



Members of the GRDC National Panel inspecting a healthy wheat crop at Cunderdin, New Norcia, WA: (left) Brendon Cant, Gavin Whiteley, Peter Reading, Neil Young, Iftikhar Mostafa, John Harvey and Vince Logan. Photo: GRDC

### **Board and Executive Management Team**

As described in more detail in Part 3, a Board of directors governs the GRDC, while a team of executive managers, based in Canberra, leads the corporation's business activities.

### Lines of business and enabling functions

At the operational level, the GRDC's organisational structure is divided into three lines of business: Varieties, Practices and New Products (described as 'output groups' for performance reporting purposes). The lines of business are supported by two enabling functions: Corporate Services, and Corporate Strategy & Program Support. A fourth output group, Communication & Capacity Building, delivers the outputs of the communication and capacity-building programs that are managed within the three lines of business.

### **National Panel**

The National Panel includes the chairs of the GRDC's three regional panels, the GRDC's Managing Director and the GRDC's executive managers. The National Panel recommends the GRDC's research investment strategies to the GRDC Board, and assists the Board in maintaining links with Australian grain growers, the Australian Government and research partners. On advice from program teams, the National Panel also recommends proposals for the national elements of the GRDC's research investments.

### Regional panels

Recognising variations in local conditions, the GRDC has three separate advisory panels to cover the northern, southern and western grain-growing regions of Australia. Figure 8 illustrates the geographical spread and characteristics of each region. Part 3 provides details on the membership of the regional panels.

The three regional panels develop regional investment priorities and make recommendations on the allocation of investment budgets to meet regional needs. They are also represented on program teams that advance recommendations on investments to the Board through the National Panel. Regional panels also identify investments that may respond to national priorities.

The regional panels also provide an interface with grain growers and researchers and promote awareness of GRDC investments and research outcomes and the corporation's strategic direction.

### Figure 8 GRDC regions

## Northern Region

Northern Region characteristics include:

- · tropical and subtropical climate
- · high inherent soil fertility
- yield dependency upon conservation of soil moisture from subtropical rainfall
- large winter and summer cropping enterprises
- · diversity in crop choice
- need for better-adapted pulses
- · premium high-protein wheats for export and domestic markets
- high-potential yields
- · competition with cotton

### **Southern Region**



Southern Region characteristics include:

- · temperate climate
- · relatively low soil fertility
- · yield dependency upon reliable spring rainfall
- smaller mixed farming enterprises involving winter cropping and livestock production
- · diverse production patterns and opportunities
- · large and diverse domestic markets
- · phase farming innovation
- · increases in intensive livestock production and demand for feed grains

### **Western Region**



Western Region characteristics include:

- Mediterranean climate
- · low soil fertility
- yield dependency upon good winter rains as spring rainfall is generally unreliable
- · large winter cropping enterprises
- narrower range of crop options
- · dominant export market, smaller domestic market
- · leading grain storage practice
- · ease of transport access to South-East Asia





### Planning and reporting approach

The GRDC is a statutory corporation, operating as a research investment body on behalf of Australian grain growers and the Australian Government. As well as its responsibilities under the PIERD Act, the corporation has accountability and reporting obligations set out in the *Commonwealth Authorities and Companies Act 1997* (CAC Act) and in the Commonwealth Authorities and Companies

(Report of Operations) Orders 2008. The GRDC is a portfolio agency of the Australian Government Department of Agriculture, Fisheries and Forestry.

Table 2 shows the elements of the approach the GRDC adopts to meet its corporate planning and reporting obligations as a statutory corporation.

Table 2 Elements of the planning and reporting approach

-	
Element	Purpose
Strategic R&D plan	Sets out the GRDC's high-level goals, strategies and performance measures for a five-year period, developed in consultation with stakeholders and approved by the Minister
Annual operational plan	Specifies the annual budget, resources and research priorities that give effect to the strategic R&D plan during a given financial year
Annual report	Provides information on R&D activities and their performance in relation to the goals set in the annual operational plan and portfolio budget statements for a given financial year
Stakeholder report	Meets legislative requirements for reporting to the grains industry's representative organisation, the Grains Council of Australia
Growers' report	Provides performance information to growers on R&D activities for a given financial year
Annual procurement plan	Makes procurement information publicly available through the Australian Government's AusTender procurement management website
Investment plan	Informs potential research partners about some of the GRDC's new investment priorities for the next financial year and invites interested parties to submit research proposals
Portfolio budget statements	As part of the Australian Government budget process, summarises the planned outputs, outcomes, performance information and financial statements for a given financial year



In response to years of drought, growers will be focusing their limited financial resources in areas where the risk is lowest and the gain highest. Photo: Evan Collis

In line with its enabling legislation, the GRDC Board communicates its strategic directions and performance objectives through a five-year strategic R&D plan that delivers:

- a statement of the GRDC's objectives and priorities
- an outline of the GRDC's strategies to achieve those objectives and priorities.

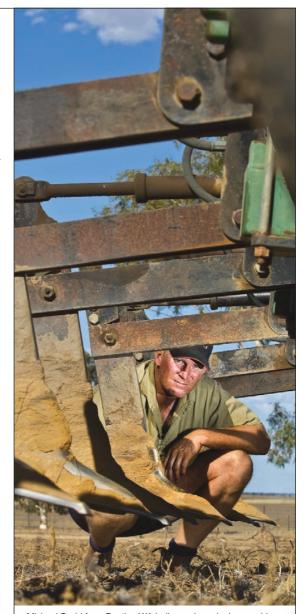
The GRDC's Strategic R&D Plan 2007–12, *Prosperity through Innovation*, took effect from July 2007.

The plan provides a framework for investment and delivery of outputs and outcomes that will address the Australian Government's National Research Priorities and Rural R&D Priorities, as well as the priorities of Australian grain growers, over the 2007–12 period. These priorities, and the GRDC's achievements in meeting them in 2007–08, are discussed in more detail in Part 2

Each year's planned activities are outlined in operational terms in an annual operational plan, and in terms of an outcome-based performance measurement framework in the portfolio budget statements. This annual report details the GRDC's achievements against its planned outputs set out in the GRDC Annual Operational Plan 2007–08 and its planned outcomes identified in the 2007–08 Portfolio Budget Statements. The output groups used for reporting purposes correspond to the three lines of business and communication and capacity building programs that underpin the GRDC's business strategy and operations.

The corporation uses the Australian National Audit Office Better Practice Guide: Public Sector Governance to assess its overall approach and ongoing development. The GRDC's corporate governance in 2007–08 is discussed in detail in Part 3.

The GRDC's drivers for action, outcomes to be achieved, detailed outputs and future directions are summarised in the performance framework shown in Figure 9.



Michael Dodd from Buntine WA believes deep ripping provides improved access to nutrients and greater water holding capacity. Photo: Evan Collis

DRIVERS

Australian Government's National Research Priorities + Rural R&D priorities + Ministerial directions Pages 30-32

Prosperity through Innovation: Strategic Research and Development Plan 2007–12

### OBJECTIVE

### **CORPORATE STRATEGIES**

Australian grain growers effectively compete in global grain markets

### **OUTPUT GROUP 1:** VARIETIES

Growers have access to superior varieties that enable them to effectively compete in global grain markets

### **OUTPUT GROUP 2: PRACTICES**

Better practices developed and adopted faster

## STRATEGIES

- Coordinate a national grains R&D agenda and portfolio
- Deliver against Australian Government priorities
- Grow and leverage total grains R&D investment
- Ensure R&D is market-driven
- Build and sustain world-leading breeding programs
- · Focus pre-breeding research on key traits
- Develop a path to market for genetically modified crops
- Facilitate faster adoption of superior varieties

- Identify and develop profitable, innovative and integrated practices and technologies
- Ensure active grain grower involvement and commitment
- Undertake targeted extension and adoption through appropriate delivery channels
- Enhance sustainable management of natural resources.

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# PERFORMANCE INDICATORS

- Significant evidence of the GRDC taking a lead role in coordinating and facilitating a national grains R&D agenda which has major impact on grower profitability and sustainability
- Key GRDC investments demonstrate national coordination with research partners
- Ongoing endorsement by the Minister for Agriculture, Fisheries and Forestry and the Parliamentary Secretary to the Minister on meeting the Australian Government priorities
- Significant evidence of leveraging total grains R&D investment
- Significant evidence of market signals being taken into account in R&D investments

- Average annual increase in yield (as measured in NVT trials) of: — 1.0 percent for wheat — 1.5 percent for sorghum
- -1.0 percent for barley 1.5 percent for canola
- -2.0 percent for pulses
- Research organisations that are responsible for at least 80 percent of the pre-breeding research having agreed to focus 50 percent or more of their resources on an agreed set of key national and regional traits
- Evidence of excellent scientific pre-breeding research and effective collaboration, both nationally and internationally
- Evidence that genes, germplasm and enabling technologies developed in GRDC-supported pre-breeding research are being used in breeding programs
- Progress towards market entry for genetically modified (GM) canola in 2008
- Availability of responsible stewardship protocols for GM crops (canola)
- Increased rate of adoption of new varieties (measured by consolidating breeding program data)
  National Variety Trials (NVT) results being used by 50 percent of
- paid advisers to assist growers to make informed variety selections Participation in NVT by 90 percent of relevant breeding programs

- Improved effectiveness of partnerships developed between
- growers, advisers and researchers Improved coordination of grains industry natural resource management and environmental R&D, driven by a comprehensive environmental plan
- Identification of the economic benefits of ameliorating subsoil constraints
- The launch of a grower-friendly web-based benchmarking interface to benchmark best management practice and its impacts on farm profitability
- Increase in the number of grower advisory committees and industry groups engaged within each agroecological zone
- Completion of a national biosecurity surveillance plan for the Australian grains industry, including five specific emergency plant pest contingency plans
- improved information flow to and from growers, through enhanced relationships with consultants
- Improved links with the Australian Government's Agriculture Advancing Australia Program including the National Landcare Program, the Natural Heritage Trust and the National Action Plan for Salinity and Water Quality

## ted with each strategy 2007-08

- The release of improved varieties of wheat, barley, canola, pulse crops and summer coarse grain crops that benefit the Australian grains industry
- New advanced germplasm, with associated molecular markers, developed and used by relevant Australian breeding programs New genes with potential importance to the Australian grains industry discovered and made available for proof-of-concept testing and further development
- New breeding technologies developed and made available to researchers and crop breeders
- An analysis of the delivery pathways for GM crops in Australia Crop variety yield and performance data made available to
- Australian grain growers through the NVT program

- A completed audit of current grain-growing practices and available technologies, identifying gaps and overlaps
   A range of newly developed farming practices successfully tested and integrated into existing farming systems
   Data collected from a free-air carbon dioxide experiment
- Development of two autonomous agricultural machinery
- systems
  Successful conduct of a number of forums that engage industry organisations and farming systems groups in
- planning on an agroecological zone basis Effectively packaged information on integrated farm practices and technologies, delivered to growers
- An economic model of irrigation farming in the southern Murray-Darling Basin developed for use by individual farmers to optimise the rotations on any given farm for any given seasonal water allocation
- Implementation of the first elements of an RD&E plan
- Promotion of the GRDC's redeveloped, more accessible website
- Training packages in precision agriculture developed for
- growers, advisers and tertiary students Production of a comprehensive environmental plan
- A national surveillance plan and contingency plans for high priority emergency plant pests

OUTCOME >

FUTURE >

### **Industry priorities**

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Role of the GRDC described in the objects of the *Primary Industries* and Energy Research and Development Act 1989 Page 102

Portfolio Budget Statements 2007-08

**Annual Operational Plan 2007-08** 

### **OUTPUT GROUP 3: NEW PRODUCTS**

Deliver new products and services (both on farm and off farm) that will assist growers to effectively compete in global grain markets

- Identify national and International technology relevant to the grains industry
- Develop partnerships to deliver new technology
- Undertake product development to meet market requirements
- Build robust business cases that demonstrate stakeholder return on investment

- Six new technologies or products identified and market assessments undertaken
- At least one new international supplier of research/intellectual property engaged
- Five unsolicited offers of new technology made to the GRDC
- A pathway to market identified for the technology emerging from the Crop Biofactories Initiative A new soil inoculant technology delivered to the Australian market
- A national stored grain research partnership established through the CRC for National Plant Biosecurity
- At least one new commercial partnership established to deliver an output of the New Products research projects
- A robust business case presented for any new investment greater than \$250,000 per year

### **OUTPUT GROUP 4: COMMUNICATION & CAPACITY BUILDING**

Increase the awareness and capacity to optimise adoption of grains research outputs

- Ensure planned, targeted, measured communication
- · Coordinate a national approach to building industry and research capacity
- Leverage delivery through partnerships
- Develop demand-driven publications and products

- Increase (over established benchmarks) in national media coverage of research activities and outputs from the GRDC and its research
- Demonstrated effective/innovative partnerships to deliver GRDC-related research outputs
- Grower and industry satisfaction that publications, products and services are timely, targeted and specific to customer needs

- A feasibility study to determine whether the production of metal nanoparticles from grain crops is both economically and practically viable
- A scoping study to review and assess existing research in the area of nitrogen fixation for cereals and canola, with a view to a major future investment in further research

  Identification of opportunities for further investment in research on industrial feedstocks in Australia, with an
- emphasis on ethanol produced from either grain or grain residue

  Establishment of the proof of concept for the use of *Pseudomonas* species as a biological control agent for snails
- Establishment of a screening program for contact and short-residue herbicides
- Development of a cross-grains industry research effort on grain hygiene, through the CRC for National Plant Biosecurity
- Identification and engagement of a commercial party to deliver the outcomes (including tests for weather damage and grain staining) required from the Objective Grain Quality Testing project Recruitment of a commercial partner to further develop a prototype mechanical grain disinfestation technology
- developed with CSIRO Entomology
- Identification, with CSIRO, of potential commercial partners for the technology emerging from the Crop Biofactories
- · Development of protocols to allow registration of microbes for use in bio-control and bio-inoculation
- Work undertaken through Philom Bios (Australia) Pty Ltd to continue the product development of phosphorus solubilisation and disease control inoculants
- Development and commercialisation of a new ethyl formate-based grain pest fumigant
- Development of a business case to attract commercial investment in the development of a microbial biological control agent for snails
- Development of a business case to attract commercial investment in novel herbicide technologies
- At least one new international supplier of research/intellectual property engaged

- · A national communication framework to facilitate the delivery of research outputs to a wide audience, building on existing regional delivery channels by broadening the content to include articles with a national emphasis
- Targeted communication strategies to assist growers to manage season-specific issues, such as rust outbreaks, as they arise
- A national audit and analysis of current grains research capacity, to determine its strengths and weaknesses and set the framework for a nationally coordinated research capacity strategy
- An integrated program of education, training and technology transfer that will develop industry capacity, including a detailed study of the range, level, suitability, accreditation status and delivery mode of current programs
- Identification of opportunities for the GRDC to work collaboratively with research partners, industry partners and governments to deliver information in ways that reduce duplication, better target stakeholders and are more cost effective
- Publications, products and services that increase awareness of the GRDC's research outputs in the grains industry and wider community and reflect the needs of different target audiences
- A standardised reporting structure for research projects, developed and adopted to enhance their ability to deliver relevant information to identified customer segments
- The GRDC developed and distributed over 500 targeted media products to communicate research and achievement

Through its commitment to innovation, an Australian grains industry that is profitable and environmentally sustainable for the benefit of the industry and wider community

The GRDC be recognised as the leader in setting, coordinating and facilitating a national grains R&D agenda driven by market signals that would enable grain growers to compete on world markets, and deliver against Australian Government priorities

### Report from the Chair and Managing Director

In 2007-08, seasonal conditions were generally better than the severe drought of the previous year but there was significant variability across major grain producing areas. It was disappointing that in many regions the good initial break was not followed by adequate finishing rains. On the positive side grain prices were sharply higher due to low global stocks. Growers continued to face the impact of higher input costs, labour shortages and the uncertainty of changing wheat-marketing arrangements. The GRDC, in collaboration with the Australian Government, research partners and grain growers continued to drive research and development to help provide growers with improved technologies to address the challenges and opportunities presented by the rapidly changing grains industry.

### **Grains industry production in 2007–08**

The production of winter grains and oilseeds in 2007–08 was 22.5 million tonnes, an increase of 4.9 million tonnes or 28 percent from the 17.6 million tonnes produced in 2006–07.2 Winter crop production was 9.7 million tonnes in Western Australia and 4.9 million tonnes in South Australia, which together accounted for 65 percent of total winter crop production in Australia.

Summer crop production in 2007–08 was 3.5 million tonnes, showing an increase of 59 percent compared with 2.2 million tonnes produced the previous year due to favourable seasonal conditions. For the major summer broadacre crop of sorghum, production more than doubled the previous year's harvest to reach 2.7 million tonnes. The higher grain prices and improved cropping conditions resulted in higher GRDC revenue than in the previous year, which together with reduced expenditure resulted in an operating surplus versus the previous year's deficit.

### The GRDC's achievements in 2007–08

This report covers the first year of implementation of the GRDC's Strategic R&D Plan 2007–12, *Prosperity* through Innovation. The Strategic R&D Plan 2007–12 emphasises increased collaboration, and clearly



Keith Perrett Chair

Peter Reading Managing Director

defines performance measures and outcomes to provide growers with the technologies and practices they require to remain competitive in global grain markets. Improved measurement of the impact of R&D on the grains industry and the wider community is a key focus over the plan period and progress against performance measurements is detailed throughout this Annual Report.

The GRDC, in collaboration with other rural R&D corporations (RDCs), CSIRO, and federal, state and territory governments, facilitated the development of the draft national Climate Change Research Strategy for Primary Industries. The GRDC worked with those partners to develop relevant performance indicators and time-lines to implement the strategy. Periodic reviews of the strategy were built in, to determine whether variations will be needed in the future to adjust to the evolving operating environment. In addition to the work on the national climate change research strategy, the GRDC was involved in various collaborations with other rural RDCs and progressed the development of a national grains research, development and extension (RD&E) strategy.

The GRDC supported work by the Western Australian Department of Agriculture and Food to better understand the likely impact of global climate change on the Western Australian grains industry. Key findings indicated that summer rainfall is likely to increase and autumn, winter and spring rainfall to decrease in most locations in the Western Australian wheat belt. Adaptation will clearly be needed to both mitigate risk in drier regions and take advantage of opportunities in wetter regions.

The GRDC facilitated a study of greenhouse gases emitted in the production and delivery of one tonne of wheat to port in south-western Australia.

<sup>2</sup> This total updates the figure of 15.7 million tonnes shown in last year's annual report, which was based on the best estimate available at the time of publication.

The study was undertaken by Agricultural Research Western Australia partners and the Australian Government Department of Climate Change. Research also continued at the GRDC-supported Australian Grains Free Air Carbon Dioxide Enrichment facility in Victoria to investigate the interacting effects of elevated carbon dioxide, irrigation, nitrogen and variety on wheat growth and production under field conditions.

GRDC investment with its partners resulted in the release of 16 new wheat varieties in 2007–08, some of which have produced yields up to 15 percent higher, in National Variety Trials, than varieties commonly grown by Australian farmers. Four new triticale varieties that were also released, two each from the University of Sydney and Australian Grain Technologies, have wide adaptation and yields up to 30 percent higher than previous triticale varieties. A new oat variety, Yallara<sup>(b)</sup>, yielded 2 percent higher than its predecessor Euro<sup>(b)</sup>, and some of the 15 new canola varieties that were released yielded up to 10 percent higher than commonly grown varieties.

As part of its strategy to manage biosecurity risks, the GRDC completed contingency plans for dwarf bunt of wheat, fusarium wilt of canola, barley stripe rust, barley stripe mosaic virus and sunn pest. The GRDC facilitated a partnership between the International Maize and Wheat Improvement Center (CIMMYT) and the Australian Cereal Rust Control Program (ACRCP) to screen Australian varieties for resistance against the exotic Ug99 stem rust pathogen, in Kenya.



Colin Wellings from the ACRCP at the CIMMYT annual disease screening nurseries located at Toluca, Mexico. Photo: Colin Wellings

The GRDC collaborated with the other rural RDCs to agree on a methodology for impact assessment. With the assistance of an independent consultant, the GRDC undertook impact studies of five project clusters in 2007–08, to assess the industry benefits as well as public spillover benefits. The impact assessment of the ACRCP demonstrated that \$23 worth of benefits were generated for every dollar that the GRDC invested in the program.

Part 2 of this report provides more details on these achievements, and on the outcomes of many other GRDC initiatives and ongoing projects.

### Challenges in 2008-09

The GRDC operates in an ever-changing grains industry. Its business environment in the year ahead is expected to be influenced by various factors, including climate change, declining terms of trade, changed grain-marketing arrangements, market volatility, high input costs, biosecurity issues and consumer attitudes.

The year 2008–09 will be the second year of *Prosperity through Innovation*, the GRDC Strategic R&D Plan 2007–12. The GRDC will continue to emphasise increased collaboration, and implement strategies that will provide growers with the technologies and practices they require to remain competitive in global grain markets. The GRDC will continue to measure the impact of R&D on the grains industry and the wider community.

The GRDC's achievements depend on the effective and timely implementation of the corporation's strategies, which in turn depends on the cooperation of the Board, panel members and staff, and strong relationships with key customer groups and research partners. As it implements corporate and output group strategies in 2008–09, the GRDC will continue to collaborate with other rural RDCs, federal, state and territory governments, and research partners. We thank them for their significant contributions to grains industry R&D in 2007–08.

We are pleased to note that our Annual Report 2006–07 has been recognised for high quality, and commend this year's report to the reader.

**Keith Perrett** 

Chair

Peter Reading
Managing Director

### Key achievements

During the year, the GRDC, in collaboration with is research partners, successfully implemented its annual operational plan and responded to the priorities of the Australian Government and Australian grain growers.

### Also in 2007-08:

- The draft national Climate Change Research Strategy for Primary Industries was facilitated by the GRDC and other RDCs, CSIRO, and federal, state and territory governments. The collaborators worked to develop relevant performance indicators and time-lines to implement the national strategy.
- The Environmental Plan for the Australian Grains Industry was developed by the GRDC in consultation with its industry partners. The implementation of the plan will equip Australian grain growers with the knowledge needed to manage a broad range of environmental challenges—including climate change—while continuing to develop a profitable, progressive and sustainable industry.

- The GRDC, through its involvement with the Primary Industries Standing Committee, provided strong support for the development of a national strategy for grains RD&E. A nationally agreed and coordinated strategy will be essential to continue to drive productivity and innovation within the grains industry. This strategy is expected to be finalised by mid-2009.
- Australian grain varieties were screened in Kenya for resistance against the exotic Ug99 stem rust pathogen, through the partnership facilitated by the GRDC between the International Maize and Wheat Improvement Center (CIMMYT) and the Australian Cereal Rust Control Program (ACRCP).
- Agreement was reached on an industry standard plant breeder's rights (PBR) licence. The GRDC published a fact sheet on the agreement, and distributed 43,000 copies to industry representatives and grain growers via *Ground Cover* magazine. This agreement will improve communication about and administration of End Point Royalties.



Fifteen new canola varieties were released in 2007-08.