

GRAINS RESEARCH AND DEVELOPMENT CORPORATION

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GRAINS RESEARCH AND DEVELOPMENT CORPORATION

Section 1: Agency overview and resources

The Grains Research and Development Corporation is a statutory authority established under the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act).

1.1 STRATEGIC DIRECTION

The GRDC's primary objective is to support effective competition by Australian grain growers in global grain markets, through enhanced profitability and sustainability. Over the period from 2007-08 to 2011-12, this objective will be achieved by four overarching corporate strategies and a set of strategies for each output group, as set out in the GRDC Strategic Research and Development Plan 2007-12, *Prosperity through Innovation*.

The GRDC's primary objective will be achieved by the following four overarching corporate strategies:

- coordinate a national grains research and development (R&D) agenda and portfolio
- deliver against Australian Government priorities
- grow and leverage total grains R&D investment
- ensure R&D is market driven.

Underlying these corporate strategies are the operational strategies of the GRDC's four output groups. The output groups for 2008-09 are as follows: (1) Practices; (2) Varieties; (3) New Products; and (4) Communication and Capacity Building.

The corporation determines its investment priorities jointly with industry and the Australian Government and acts in partnership with public and private research partners, other R&D investors, agribusiness and groups of grain growers. The National Research Priorities and the Rural R&D priorities have been clearly reflected in the corporation's 2008-09 outputs, including the government's focus on climate change and productivity growth.

1.1.1 2008-09 investment priorities

To help achieve the objectives set out in *Prosperity through Innovation*, the GRDC has identified priorities for 2008-09. Section 2 of the GRDC Budget Statements provides details of these priorities, and describes how they relate to the prevailing business

environment and the R&D priorities of the Australian Government and Australian grain growers.

Priorities for 2008–09 include:

- *climate change*—developing more resilient grain varieties, including drought tolerant and frost tolerant varieties, under predicted climate change scenarios, and working on CropMate, the climate information management tool for crop production, which will collate climate, weather, soil, crop and economic data associated with the decision points in a grain production system in a particular locality
- *greenhouse gas emissions*—studying paddock-based greenhouse gas emissions from Western Australian grain production, to allow assessment of greenhouse gas emissions throughout the life cycle from wheat to bread, enable better targeting of greenhouse gas mitigation practices and identify areas where nitrogen use efficiency can be improved to increase grain production profitability
- *weed management in changing farming systems*— identifying the likely impact of weed threats and developing appropriate methods for managing weeds in changing farming systems
- *water use efficiency*—establishing a national approach to achieve improvements in water use efficiency, focusing on creating partnerships between growers, research organisations and agribusiness to develop strategic projects and monitor overall progress in each region
- *wheat breeding*—supporting wheat-breeding activities in Australia through holding equity in wheat-breeding entities, investing in pre-breeding research, and supporting the National Variety Trials
- *barley breeding*—developing a productive, profitable and sustainable Australian barley industry supported by the release of commercially successful, targeted-to-market, elite cultivars of malting barley and feed barley
- *National Durum Wheat Improvement Program*—developing a profitable, internationally competitive and ecologically sustainable Australian durum wheat industry
- *Australian Winter Cereals Pre-Breeding Alliance*—fostering greater levels of communication, coordination and collaboration between research partners through a national approach to cereal pre-breeding research
- *crop improvement of grain sorghum in Australia*—developing improved germplasm that will benefit grower profitability by increasing the yield and value of the grain and reducing production costs and losses
- *post-harvest grain hygiene*—working to integrate and focus the research effort on fumigation and insect management in grain storage

- *new grain quality testing*—developing a rapid replacement for the ‘falling number test’ used for assessing weather damage to grain when there is a wet finish to the season, which will benefit growers by avoiding significant delays while samples are tested
- *international collaboration*—supporting valuable international alliances and investments, such as a contractual agreement and investments with the International Maize and Wheat Improvement Center (CIMMYT) in Mexico and the Global Crop Diversity Trust
- *capacity building*—building skills, training and education in agriculture.

These priorities are part of the GRDC’s core strategy of coordinating a national approach to grains R&D, which includes an emphasis on reducing duplication and fragmentation.

1.2 AGENCY RESOURCE STATEMENT

Table 1.1 shows the total resources from all origins. The table summarises how resources will be applied by outcome.

Table 1.1: Agency resource statement—Budget estimates for 2008–09 as at Budget May 2008

Source	Estimate of prior year amounts available in 2008–09 \$'000	Proposed at Budget 2008–09 \$'000	Total Estimate 2008–09 \$'000	Estimated Available Appropriation 2007–08 \$'000
Opening balance / Reserves at bank	76,596	-	76,596	65,274
REVENUE FROM GOVERNMENT				
Special Appropriations				
<i>Primary Industries and Energy Research and Development Act 1989, s. 30(3) – Grains R&D Corporation</i>				
Total Special Appropriations		125,859	125,859	108,724
Total revenue from government		125,859	125,859	108,724
FUNDS FROM INDUSTRY SOURCES				
Levies – PIERD Act (1989)		75,856	75,856	72,037
Less amounts paid to the CRF		(75,856)	(75,856)	(72,037)
Total		-	-	-
FUNDS FROM OTHER SOURCES				
Interest		6,866	6,866	5,119
Royalties		1,500	1,500	1,140
Other		1,395	1,395	3,789
Total		9,761	9,761	10,048
Total net resourcing for GRDC	76,596	135,620	212,216	184,046

Note: Reserves are within the GRDC’s prudential limits to meet shortfalls in income due to lower grain production and volatility in grain prices.

1.3 BUDGET MEASURES

The Grains Research and Development Corporation is not affected by any 2008-09 budget measures.

Section 2: Outcome and planned performance

The Australian Government requires agencies to measure their intended and actual performance in terms of outcomes. Government outcomes are the results, impacts or consequences of actions by the government on the Australian community. Agencies are required to identify the output groups which demonstrate their contribution to government outcomes over the coming year.

Each outcome is described below by output groups, specifying the performance indicators and targets used to assess and monitor the performance of the Grains Research and Development Corporation in achieving government outcomes.

2.1 OUTCOME 1

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

2.1.1 Outcome 1 strategy

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

The GRDC's outcome will be achieved through the operational strategies of the GRDC's four output groups; Practices, Varieties, New Products and Communication and Capacity Building. By implementing each of the output groups strategies (as outlined below), the GRDC will continue to be a key driver in helping Australian grain growers to remain competitive in global grain markets, and in meeting Australian government Priorities.

Output Group 1

Objective: Better practices developed and adopted faster

The Practices output group will achieve its objective by implementing four strategies:

- 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.

These strategies will be implemented by investing in agronomy, soil research, climate change, environmental management and crop protection. Results from these investments will be validated and integrated into farming systems, and grower programs will be developed to assist with their adoption.

Investment priorities for 2008–09

To help achieve the objectives set out in *Prosperity through Innovation* the GRDC in consultation with its stakeholders has identified key investment priorities for the Practices output group.

Key priorities for 2008–09 include:

- **Climate change** – The GRDC has been a key participant in the development of a national climate change research strategy to meet the needs of primary industries.

The key themes of the strategy are to: map and build on existing research, development and extension activities; identify key information gaps; identify strategies for national collaboration; identify priority areas for collaborative R&D; and identify successful strategies for communication and adoption of research.

The GRDC will use the strategy to guide its investments in both the mitigation of greenhouse gas emissions and efforts to assist the industry to adapt to climate change, as a complement to its investments in managing the effects of climate variability.

- **Precision agriculture** – The GRDC will continue to invest in projects to improve education and training in precision agriculture for growers, and to encourage the validation and integration of new approaches through grower groups.

For growers already using the latest technologies and approaches, variations in the scale at which measurements are made present a major challenge in integrating information from a wide range of sources to support management decisions. The GRDC will invest in the development of techniques to better integrate information collected at different scales. An information package will also be developed to assist

growers to take advantage of spectral imaging technologies, which can be used to minimise the use of herbicides.

- **Biosecurity** – Through the Cooperative Research Centre for National Plant Biosecurity, the National Integrated Weed Management Initiative and the Australian Cereal Rust Control Program, the GRDC will invest in a range of programs to protect the Australian grains industry from a range of biosecurity threats posed by pests, weeds and diseases in order to maintain and increase market access.

This will include the development of a further five emergency plant pest contingency plans through Plant Health Australia, and the development of enhanced detection methods for the stored-grain pest khapra beetle and for *Tilletia indica*, the cause of the wheat disease karnal bunt. Potential genetic approaches to achieve sustainable resistance to Russian wheat aphid and anticipated exotic cereal rust threats will also be identified.

- **Grains industry environmental plan** – To better demonstrate the grains industry's environmental credentials and identify environmental issues that need to be addressed, the GRDC has developed a grains industry environmental plan. Based on principles of ecologically sustainable development, the plan will examine risks and opportunities in dealing with key issues across the catchments in which the industry operates.

In 2008-09 the GRDC will launch a grains industry environmental plan and implement the first steps of the plan's identified priorities. The plan involves gathering data from grain growers about the use of certain practices on-farm. Tracking the environmental impacts of the farming practices of interest will be useful in understanding how grain growers are dealing with the dual needs to increase productivity and improve environmental management.

- **Driving water use efficiency on-farm and in catchments** – Managing water stress and increasing water use efficiency will continue to be important drivers of change in Australian agriculture. It is thought that improving efficiency in just some zones has the potential to significantly lift the productivity and profitability of the entire grains industry. As a result, the output group will work at the regional level to address ways to improve average water use efficiency, understand and articulate elements of business risk management, and improve the characterisation of the physical, financial and social environment in which farming systems operate.

The GRDC will also explore opportunities to develop partnerships with regional natural resource management (NRM) bodies in prominent grain growing areas to deliver products, tools and skills that can improve crop agronomy and other management practices that will be effective in meeting catchment targets.

Output Group 2

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

The Varieties output group will achieve its objective by implementing four strategies:

- 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.

These strategies will be implemented by investing in gene discovery, breeding technologies, genetic resources, functional genomics, germplasm enhancement, genetic transformation, plant breeding, crop variety testing, grain quality research and plant pathology (when directly related to breeding). The performance of new crop varieties developed by all Australian breeding programs is independently tested through the National Variety Trials (NVT).

Investment priorities for 2008–09

To help achieve the objectives set out in *Prosperity through Innovation* the GRDC in consultation with its stakeholders has identified key investment priorities for the Varieties output group.

Priorities for 2008–09 include:

- **Wheat and barley breeding**—The GRDC has assisted its research partners to restructure their milling wheat and feed wheat breeding programs towards being self-funded through revenue from End Point Royalties (EPRs). It will continue to support wheat-breeding activities in Australia through holding equity in wheat-breeding entities, investing in pre-breeding research, supporting NVT and improving agronomic practices. The Varieties output group may also invest in wheat quality classification, depending on the outcomes of the Wheat Industry Expert Group's report.

The GRDC will continue to invest in breeding for dual-purpose feed wheat for the high-rainfall zone, the establishment of a nationally coordinated durum breeding program, and breeding for superior varieties of malt and feed barley for both export and domestic markets. The GRDC's five-year investment in Barley Breeding Australia (BBA) will be reviewed during 2008–09 to determine the effectiveness of BBA and identify further improvements that could be made to the program.

- **Canola Quality Objectives Group**—The GRDC will continue to invest in the Canola Quality Objectives Group (CQOG) in 2008–09. The CQOG is made up of all relevant industry representatives and provides direction and market intelligence to the Australian canola-breeding sector.

The CQOG acts as a technical adviser, ensuring timely and accurate market information is fed into the germplasm enhancement and breeding programs. This will help to ensure that there are good links between breeding research and breeding, such that the 'market pull' and the 'research push' are both factored into priority setting.

- ***Development of enhanced germplasm*** – The GRDC will continue to support the Australian Winter Cereals Pre-Breeding Alliance. The alliance represents at least 80% of industry investment in pre-breeding research for winter cereals.

The GRDC will also continue to maintain and enhance links with important international research institutions. The relationship with CIMMYT in Mexico has been especially valuable in the past and will continue to be of strategic importance. In 2008–09, the GRDC will strengthen its relationship with the International Center for Agricultural Research in the Dry Areas (ICARDA) in Syria, to better complement its investments in wheat, barley and pulse breeding.

- ***Gene discovery and new technologies*** – In 2008–09, the GRDC will re-invest in the molecular marker programs for wheat, barley, canola and lupins, focusing on disease resistance and other priority traits as defined by the breeders.

The Australian Centre for Plant Functional Genomics—a co-investment by the GRDC, the Australian Research Council, the South Australian Government and other investors—has restructured its portfolio to focus on the discovery of genes that confer tolerance to drought, salt and frost.

The GRDC will work with industry to ensure effective stewardship for the GM canola technologies that have been admitted to New South Wales and Victoria. Additionally, the GRDC will work with the research community and industry stakeholders to develop effective partnership models to deliver other GM crops to Australian growers in the future.

- ***National Variety Trials*** – The NVT produce independent information on variety performance for Australian grain growers. The success of the NVT program is paramount to the GRDC's strategy of accelerating the adoption of new winter cereal, pulse and canola varieties in Australia. In 2008–09, the program will include GM canola in its trial program for the first time.

Output Group 3

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

The New Products output group will achieve its objective by implementing four strategies:

- 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.

These strategies will be implemented by investing in new grain products and new farm products and services. New grain products covers grain uses, such as food and industrial uses (including biofuels); feed and food safety; and grain hygiene. New farm products and services cover farm inputs (goods and services) and grain handling and storage.

Investment priorities for 2008–09

To help achieve the objectives set out in *Prosperity through Innovation* the GRDC in consultation with its stakeholders has identified key investment priorities for the New Products output group.

Priorities for 2008–09 include:

- ***New food products*** – In 2008–09, the GRDC will identify and develop opportunities for partnering with companies to deliver several new grain food products to market. For example, the GRDC’s coeliac-friendly beer project with CSIRO Plant Industry has reached the product development stage, and a preliminary brew has been made and tested. In 2008–09, further product development, as well as identification of a suitable commercial partner, will be undertaken.

The GRDC will also continue collaborating with GoGrains Limited to market the company and develop its own income stream based on the message of ‘4+ serves of whole grains a day’.

- ***New feed products*** – In 2007–08, the GRDC formed a partnership with feed grain user organisations to ensure that grains are developed to meet the demands of the livestock industries. The partnership has identified a number of key areas in grain nutrition that could assist the livestock industries.

For example, the GRDC will continue to support the Pork CRC in implementing and using near-infrared calibrations developed by the Premium Grains for Livestock Program. The development and implementation of a project investigating the potential to use grain nutrition to reduce methane emission in ruminants will also be examined for investment in 2008–09.

- ***New industrial products*** – In 2008–09, the GRDC will focus on determining a path forward for technologies that use grain and grain residues as feedstock for ethanol production. The aim is to develop opportunities for energy efficiency, regional self-sufficiency and energy production for Australian grain growers.

The GRDC will also continue its partnership with CSIRO in the Crop Biofactories Initiative. This project, which has progressed past the discovery and proof-of-concept stages, has continued to adjust its project portfolio with a very market-driven focus.

- ***Food safety and grain hygiene*** – In 2007–08, the GRDC, grain bulk-handling companies and the CRC National Plant Biosecurity successfully developed a program within the CRC that can encompass issues around grain hygiene. This provides a vehicle to meet the GRDC's objectives of having a national grain hygiene agenda, building capacity in grain hygiene areas that are deficient, and engaging with bulk-handling companies in relation to grain hygiene. The major goal in 2008–09 will be to develop a new suite of projects that dovetail with and strengthen the GRDC's existing grain hygiene projects with the CRC.
- ***New farm products and services*** – New farm products and services identifies investment opportunities in Australia and internationally. Those areas with the greatest potential to deliver benefits to the grains industry are subjected to careful market evaluation, and a business case is developed to justify each potential investment.

Key themes within the GRDC's new farm products and services portfolio for 2008–09 include:

- developing technologies or knowledge that provide or define a unique selling advantage for Australian grain in key export markets
- developing and commercialising innovative instrumentation technologies to provide faster, cheaper, more accurate and/or more quantitative measurement tools for the grains industry
- in collaboration with commercial manufacturers, identifying new research targets to build on extensive existing research into the manipulation of plant growth and health through the use of soil biological inoculants
- developing novel chemicals, including evaluating chemicals sourced overseas, that are effective against Australian insect pests, weeds and diseases
- developing commercial links to assist the development of products from existing projects, such as the GLO2 grain fumigant project.

Output Group 4

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

The Communication and Capacity Building output group will achieve its objective by implementing four strategies:

- 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.

These strategies will be implemented by focusing on corporate communication, delivery of publications and products, and capacity building.

Investment priorities for 2008–09

To help achieve the objectives set out in *Prosperity through Innovation* the GRDC in consultation with its stakeholders has identified key investment priorities for the Communication and Capacity Building output group.

Priorities for 2008–09 include:

- **Communication campaigns** – In 2008–09, investment in communication activities will aim to develop a more integrated regional and national communication approach, in order to demonstrate the significance of the GRDC’s investments to a wider audience (including the readers of mainstream newspapers). This will be complemented by an increase in issue-focused campaigns targeting particular industry segments.
- **Publications, products and services** – The GRDC continually seeks new ways to provide R&D information in user-friendly formats and through channels that meet the needs of its diverse range of customers. Exploring new ways of packaging and delivering information to grain growers and the wider industry will continue to be a priority for the GRDC in 2008–09. This will include identifying opportunities to:
 - expand the range of electronic delivery platforms the GRDC uses to extend information to stakeholders, examining the potential of emerging technologies as they arise
 - integrate GRDC information products and services to maximise the delivery and uptake of relevant information to customers
 - improve collaboration with industry networks to emphasise the accessibility of information and reduce duplication.

In 2008–09, the number of fact sheets distributed through the *GroundCover* newspaper will increase, to better reflect the range of important issues that impact on grain growers and the grain-growing business enterprise. Similarly, the number

of regionally focused research reports distributed to growers will increase in response to greater demand for more regionally specific information.

- *Industry and research capacity* – In 2008, the GRDC will commence implementation of its capacity-building strategy. An audit will be commissioned to identify capacity-building needs in respect of each of the GRDC's line of business strategies.

The GRDC will also continue to support a range of activities designed to build skills and expertise that will equip the Australian grains industry with the capacity to continuously innovate. Specifically, the GRDC will continue to support training awards, travel awards, conferences, and Nuffield Foundation and Australian Rural Leadership Foundation scholarships.

2.1.2 Outcome 1 resource statement

Table 2.1 provides additional detail of Budget appropriations and the total resourcing for Outcome 1.

Table 2.1: Total resources for Outcome 1

Outcome 1: Through its commitment to innovation, an Australian grains industry that is profitable and sustainable for the benefit of the industry and wider community.	2008–09 Total estimate of available resources \$'000	2007–08 Estimated actual \$'000
Output Group 1: Practices		
Funds from industry sources		
– Levies	26,624	23,988
Funds from Australian Government		
– Matching Commonwealth contribution	17,552	12,217
Funds from other sources	3,426	3,346
Subtotal for Output Group 1	47,602	39,551
Output Group 2: Varieties		
Funds from industry sources		
– Levies	36,412	36,163
Funds from Australian Government		
– Matching Commonwealth contribution	24,001	18,417
Funds from other sources	4,685	5,044
Subtotal for Output Group 2	65,098	59,624
Output Group 3: New Products		
Funds from industry sources		
– Levies	8,269	7,492
Funds from Australian Government		
– Matching Commonwealth contribution	5,450	3,815
Funds from other sources	1,064	1,045
Subtotal for Output Group 3	14,783	12,352
Output Group 4: Communication and Capacity Building		
Funds from industry sources		
– Levies	4,551	4,394
Funds from Australian Government		
– Matching Commonwealth contribution	3,000	2,238
Funds from other sources	586	613
Subtotal for Output Group 4	8,137	7,245
Total resources for Outcome	135,620	118,772
	2008–09	2007–08
Average staffing level (number)	51	46

2.1.3 Contributions to Outcome 1

Output Group 1: Practices

Output Group 1: Practices	
<p>The Practices output group develops and promotes innovative and integrated practices and technologies to increase the grains industry's capacity for on-farm change, particularly in the areas of soil constraints, water and nutrient use, crop threats, environmental variability, agronomic improvements and biosecurity.</p> <p>Alliances between growers and advisers are becoming increasingly important in ensuring that new and improved varieties, practices and technologies are integrated into farming systems. Recognising that information needs and preferred delivery mechanisms differ according to production region, enterprise mix and individual circumstances, the output group packages and tailors information that is regionally specific, and delivers it to growers and advisers through appropriate networks.</p> <p>The integration of natural resource management practices into cropping systems is essential for the long-term viability of the grains industry. The GRDC has significant partnerships with a range of bodies established by the Australian Government and state governments to deal with environmental issues. Through the Practices output group, the GRDC aligns sustainable production systems research at a farm level with broader, community-based land use initiatives.</p> <p>The Extension and Grower Programs area is focused on improving the timeliness, relevance and quality of information packages on offer to customers. The further development of delivery platforms and relationships with extension networks in 2008–09 will accelerate research, development and extension outcomes.</p>	
Key performance indicators	2008–09 target
Increased use of spectral imaging and other precision agriculture technologies to improve production efficiency	<ul style="list-style-type: none"> • An information package for growers on how to use spectral imaging and precision guidance technologies in crop protection and nutrition decisions • Targeted training activities and information packages in precision agriculture directed at advisers, growers and undergraduate students
Coordinated national investments for weed management research and communication	<ul style="list-style-type: none"> • Successful establishment of a coordinated national integrated weed management initiative • New investment into preventative strategies for herbicide resistance management in collaboration with government, manufacturers and resellers
Effective management of weed, disease and insect biosecurity risks	<ul style="list-style-type: none"> • New strategic investment in surveillance, improved identification of exotic pests to Australia and development of new sources of plant resistance

Output Group 1: Practices (continued)	
Key performance indicators	2008–09 target
Improved effectiveness of partnerships between growers, advisers and researchers	<ul style="list-style-type: none"> • New focused investments in farming systems research, development and extension • New framework for improved pathways to registration and prioritisation of pesticide research outcomes in the grains industry • A series of regional workshops to engage growers, industry organisations and farming systems groups in planning on an agroecological zone basis
Successful development of an industry-agreed framework for measuring and monitoring improvements in water use efficiency	<ul style="list-style-type: none"> • Measurement of water balance in all current conservation farming projects • Integration of water use efficiency as a key measure in farming systems related research, development and extension • Establishment of a systems-based national methodology to measure water use efficiency
Engagement of key grain-growing regional natural resource management bodies in the development of sustainable cropping systems for a variable climate	<ul style="list-style-type: none"> • Launch of a comprehensive grains industry environmental plan • A series of meetings in key grain-growing catchments to identify and prioritise key management practices relating to managing impacts of climate change • Develop new partnerships with targeted NRM bodies in major grain-growing areas to deliver products, tools and skills from GRDC research, development and extension. • New investments on improved crop agronomy and management practices effective in meeting catchment, production and environmental targets • Commencement of the integration of current crop nutrition knowledge into the national Australian Soil Resource Information System (ASRIS) database to allow growers and their advisers to make better fertiliser decisions • Further quantification of the economic benefit of ameliorating subsoil constraints • Training packages to provide growers with skills to better manage the impacts of climate variability and climate change

Output Group 1: Practices (continued)	
Key performance indicators	2008–09 target
Improved effectiveness of research advisory committees	<ul style="list-style-type: none"> • Review of Research Advisory Committee's operations and proposed feedback mechanisms • Expansion of the zones in which the GRDC conducts industry liaison
Improved delivery of information to customers to aid adoption of R&D	<ul style="list-style-type: none"> • Analysis of extension networks across Australia to improve the efficiency of delivery from the GRDC • A completed audit of current decision support tools and products, identifying gaps and overlaps
Demonstrated engagement with agribusiness channels to improve information flow	<ul style="list-style-type: none"> • Establishment of national and regional meetings with a range of agribusinesses

Output Group 2: Varieties

Output Group 2: Varieties	
<p>The Varieties output group invests in gene discovery, breeding technologies, genetic resources, functional genomics, germplasm enhancement, genetic transformation, plant breeding, crop variety testing, grain quality research and plant pathology (where directly related to breeding), across many of the 25 crops in the GRDC's R&D portfolio.</p> <p>The output group supports crop improvement for growing domestic markets, as well as for exports, with the aim of raising the overall value of the Australian grains industry. This means developing new varieties with enhanced yields as well as quality attributes that add value and meet market demands, and includes collaborating with the grains industry to clarify consumer requirements.</p> <p>Varieties also supports the search for new sources of disease resistance to incorporate into crops, as well as research to improve the understanding of the processes involved in resistance breakdown. It also invests to facilitate an industry-wide approach to improving data collection, for industry-good purposes and to increase the efficiency of end point royalty (EPR) collection.</p>	
Key performance indicators	2008–09 target
Average annual increase in yield, as measured in National Variety Trials (NVTs), for wheat, barley, canola, sorghum and pulses	<ul style="list-style-type: none"> • Average annual increase in yield (as measured in NVT trials) of: <ul style="list-style-type: none"> – 1.0% for wheat – 1.0% for barley – 1.5% for canola – 1.5% for sorghum – 2.0% for pulses • The release of improved varieties of wheat, barley, canola, pulses and summer coarse grains that benefit the Australian grains industry

Output Group 2: Varieties (continued)	
Key performance indicators	2008–09 target
Research organisations that are responsible for pre-breeding research with a focus on an agreed set of key national and regional traits	<ul style="list-style-type: none"> • Industry agreement on key target traits for wheat and barley • Research organisations that are responsible for at least 80% of the pre-breeding research, having agreed to focus 50% or more of their resources on an agreed set of key national and regional traits
Evidence of excellent scientific research and effective collaboration both nationally and internationally through independent, expert scientific review in 2008	<ul style="list-style-type: none"> • Enhanced communication and collaboration between industry and research stakeholders • Five examples of scientific excellence identified and reported both nationally and internationally through independent, expert scientific review in 2008
Evidence that genes, germplasm and enabling technologies developed in GRDC-supported pre-breeding research are being used in breeding programs	<ul style="list-style-type: none"> • New traits and associated molecular markers developed for use by 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
Continued progress towards market entry for GM canola into Australia	<ul style="list-style-type: none"> • Delivery platforms for genetically modified (GM) crops in Australia • Access to enabling technologies • Access to novel traits which reduce key limitations to grain production
Participation in NVTs by relevant breeding programs	<ul style="list-style-type: none"> • Participation in NVT by 90% of relevant breeding programs • Crop variety yield and performance data made available to Australian grain growers through the NVT program
EPR collection processes	<ul style="list-style-type: none"> • Support to industry to simplify EPR collection processes and increase EPR collection efficiency

Output Group 3: New Products

Output Group 3: New Products	
<p>The New Products output group comprises New Grain Products and New Farm Products and Services. The two investment areas target opportunities both pre-farm gate and post-farm gate, by investing in research, development and commercialisation to provide growers with additional options in farm management and marketing.</p> <p>To achieve its outcome, the output group actively identifies national and international technology relevant to the Australian grains industry; builds partnerships to develop products and services and deliver them to growers; undertakes product development to meet market requirements; and develops robust business cases that demonstrate the market demand for and value of any product or service that the GRDC and its partners propose to invest in.</p>	
Key performance indicators	2008–09 target
Identification of national and international work being undertaken in the area of nitrogen fixation	<ul style="list-style-type: none"> Identify and evaluate potential investment opportunities in the area of nitrogen fixation, using the 2008 report by Steven M. Jones entitled <i>The state of knowledge and opportunities for investment in non-symbiotic nitrogen fixation in cereals and canola crops in Australia</i>
Assessment of a fungal biopesticide product pipeline for activity against several new pest targets, including silverleaf whitefly and etiella moth	<ul style="list-style-type: none"> Identification of product pipeline from different sources Assessment against key pest targets undertaken
Development of commercial strategies and engagement with commercial partners	<ul style="list-style-type: none"> Develop commercial strategies and, where appropriate, engage with commercial parties for: <ul style="list-style-type: none"> Crop Biofactories Initiative coeliac-friendly beer high-amylose wheat fungal biopesticide
Licence agreements negotiated for grain fumigant GLO2	<ul style="list-style-type: none"> Engagement of key commercial partners for the final phase (registration and market delivery) of the GLO2 grain fumigant project
Product development and commercial assessment to deliver a snail biopesticide product	<ul style="list-style-type: none"> Successful recruitment of a commercial partner to undertake phase two (product development and commercial assessment) of the snail biopesticide project Investment in phase two of the snail biopesticide project, to take the technology from a proof-of-concept stage to a commercial product

Identify, scope and negotiate joint projects in partnership with feed grain user organisations	<ul style="list-style-type: none"> • Identify collaborative projects • Develop solutions to increase whole-of-chain profitability and sustainability
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Output Group 4: Communication and Capacity Building

Output Group 4: Communication and Capacity Building	
<p>Through a range of communication activities, the Communication and Capacity Building output group positions the GRDC as a credible source of technical and industry-specific information in Australia and internationally. It invests in a range of programs to enhance awareness, motivation and ultimately adoption of the outcomes of GRDC and partner investments.</p> <p>In consultation with the other output groups, Communication and Capacity Building identifies opportunities for high-quality and reliable new publications and products that meet grains industry needs. Australian grain growers are a diverse audience, and their information needs and preferred delivery mechanisms vary. Accordingly, the output group packages and delivers timely and targeted information to satisfy the different demands.</p> <p>Recognising the roles that research partners, government agencies and industry bodies play in influencing on-farm decision making, the output group also collaborates with these entities in a range of joint communication and delivery activities. Such collaboration ensures that the GRDC can leverage and maximise the dissemination of new information.</p> <p>The output group also supports initiatives to encourage and develop capacity in education, training and technology transfer for researchers and the wider industry.</p>	
Key performance indicators	2008–09 target
Implementation of the GRDC communication strategy	<ul style="list-style-type: none"> • A revised GRDC communication strategy developed that identifies the needs of stakeholders, key messages and processes for evaluation • Successful implementation of the communication strategy, to facilitate the delivery of research outputs to a wide audience, building on existing regional delivery channels • Monitoring of grains industry and corporate issues to develop targeted communication strategies (e.g. pests and diseases) • Identification of opportunities for the GRDC to work collaboratively with R&D corporations, research partners, industry partners and governments to deliver information in ways that reduce duplication, better target stakeholders and are more cost effective

Increased awareness of the GRDC and its research outcomes	<ul style="list-style-type: none"> • Unaided awareness of the GRDC increases through targeted communication activities (from 68% in 2006 to 80% in 2009) • Increased understanding of the GRDC and its role as measured through independent research surveys • Publications, products and services that increase awareness of the GRDC's research outcomes in the Australian grains industry and wider community and reflect the needs of different target audiences
Output Group 4: Communication and Capacity Building (continued)	
Key performance indicators	2008–09 target
Increased favourable mentions of the GRDC's research activities and outputs and those of its research partners	<ul style="list-style-type: none"> • Increase in positive media coverage (over established benchmarks) for print and electronic media
Increased awareness of GRDC investment outcomes through promotion at targeted conferences and workshops	<ul style="list-style-type: none"> • Increased profile of the GRDC and its research outcomes at grains conferences
Increased profile of the GRDC's regional panels	<ul style="list-style-type: none"> • The proportion of growers who are aware of the GRDC's regional panels increases to 50% by 2009
Number of alternative electronic delivery mechanisms identified	<ul style="list-style-type: none"> • Exploration of alternative electronic delivery mechanisms for rapid dissemination of information to customers • Introduction of mobile phone based extension • Delivery of audio based extension tools
Improved ability to deliver new information packages and tools via the GRDC website	<ul style="list-style-type: none"> • Creation and dissemination of web pages addressing specific industry issues • Effectively packaged information on integrated research, development and extension issues and technologies delivered to customers
Improved delivery of technical information through workshops held across Australia	<ul style="list-style-type: none"> • Implementation of technical workshops on strategic and tactical research, development and extension issues
Increased grower and industry satisfaction that publications, products and services are timely, targeted and specific to customer needs	<ul style="list-style-type: none"> • Production of fact sheets that present information on particular issues, both regional and national, and are timely, targeted and relevant to growers • Increase in grower and industry satisfaction of <i>GroundCover</i> newspaper as measured through independent market research surveys

Section 3: Explanatory tables and budgeted financial statements

Section 3 presents budgeted financial statements which provide a comprehensive snapshot of agency finances for the Budget year 2008–09. It explains how Budget plans are incorporated into the financial statements and provides further details of the reconciliation between the agency and outcome resource statements, movements in administered funds, special accounts and government Indigenous expenditure.

3.1 EXPLANATORY TABLES

3.1.1 Reconciliation of total available appropriation and outcomes

The Grains Research and Development Corporation is not funded directly from appropriation.

3.1.2 Movement of administered funds between years

The corporation does not have any administered funds in 2008–09.

3.1.3 Special Accounts

The corporation does not have any special accounts in 2008–09.

3.1.4 Australian Government Indigenous expenditure

The corporation has no Australian Government Indigenous expenditure to report in 2008–09.

3.2 BUDGETED FINANCIAL STATEMENTS

3.2.1 Differences in agency resourcing and financial statements

There are no differences between agency resource information and the financial statements as a result of differences between Australian Accounting Standards and Government Finance Statistics.

3.2.2 Analysis of budgeted financial statements

The Grains Research and Development Corporation's budget estimates are indicative only. Changes in the operating environment may require revisions of revenue and expense estimates in order to meet strategic priorities.

Budgeted income statement

The Grains Research and Development Corporation is estimating total revenue of \$135.6 million in 2008-09, an increase of \$16.8 million from the 2007-08 estimated actual. The increase is primarily due to an increase in levy revenue due to higher expected crop production and grain prices. The estimated levy revenue is therefore very sensitive to rainfall during the growing season and volatility of grain prices.

Total expenses are estimated at \$121.0 million in 2008-09, an increase of approximately \$13.5 million from the previous year. The increase mainly relates to higher R&D expenditure in 2008-09 relative to 2007-08.

The GRDC's budgeted surplus of \$14.6 million in 2008-09 depends on crop production levels and grain prices.

Budgeted balance sheet

The GRDC asset position of \$129.8 million represents an increase of \$17.4 million from the 2007-08 estimated actual. This is primarily due to an increase in reserves. Liabilities are estimated at \$38.6 million, which is an increase of \$2.8 million from 2007-08 estimated actual. This is mainly due to an increase in R&D supplier liabilities for 2008-09.

3.2.3 Budgeted financial statements tables

Table 3.2.1: Budgeted departmental income statement (for the period ended 30 June)

	Estimated actual 2007–08 \$'000	Budget estimate 2008–09 \$'000	Forward estimate 2009–10 \$'000	Forward estimate 2010–11 \$'000	Forward estimate 2011–12 \$'000
INCOME					
Revenue					
Revenues from government	36,687	50,003	53,886	52,867	46,101
Revenues from industry sources	72,037	75,856	79,388	58,971	68,955
Interest	5,119	6,866	7,257	7,308	7,334
Royalties	1,140	1,500	1,600	1,600	1,600
Other	3,789	1,395	1,566	1,847	1,569
Total revenue	118,772	135,620	143,697	122,593	125,559
Gains					
Other	-	-	-	-	-
Total gains	-	-	-	-	-
Total income	118,772	135,620	143,697	122,593	125,559
EXPENSE					
Employees	5,800	6,000	6,180	6,366	6,556
Suppliers	100,989	114,386	136,243	115,057	118,357
Depreciation and amortisation	661	614	577	577	587
Total expenses	107,450	121,000	143,000	122,000	125,500
Surplus (Deficit) before income tax	11,322	14,620	697	593	59
Income tax expense	-	-	-	-	-
Surplus (deficit) attributable to the Australian Government	11,322	14,620	697	593	59

Prepared on Australian Accounting Standards basis.

Table 3.2.2: Budgeted departmental balance sheet (as at 30 June)

	Estimated actual 2007–08 \$'000	Budget estimate 2008–09 \$'000	Forward estimate 2009–10 \$'000	Forward estimate 2010–11 \$'000	Forward estimate 2011–12 \$'000
ASSETS					
Financial assets					
Cash and equivalents	8,601	4,244	5,115	1,307	1,494
Trade and other receivables	3,909	3,909	3,909	3,909	3,909
Investments accounted for under the equity method	258	258	258	258	258
Investments	86,146	106,146	111,146	111,146	111,146
Other investments	7,080	9,004	10,504	10,504	10,504
Total financial assets	105,994	123,561	130,932	127,124	127,311
Non-financial assets					
Land and buildings	5,558	5,366	5,174	4,982	4,790
Infrastructure, plant and equipment	326	398	470	519	544
Intangibles	536	442	385	351	331
Total non-financial assets	6,420	6,206	6,029	5,852	5,665
Total assets	112,414	129,767	136,961	132,976	132,976
LIABILITIES					
Provisions					
Employees	800	800	800	800	800
Total provisions	800	800	800	800	800
Payables					
Suppliers	35,018	37,751	44,248	39,670	39,611
Total payables	35,018	37,751	44,248	39,670	39,611
Total liabilities	35,818	38,551	45,048	40,470	40,411
Net assets	76,596	91,216	91,913	92,506	92,565
EQUITY^a					
Contributed equity					
Reserves	66,151	76,127	62,872	64,585	57,346
Retained surpluses or accumulated deficits	10,445	15,089	29,041	27,921	35,219
Total equity	76,596	91,216	91,913	92,506	92,565
Current assets	105,994	123,561	130,932	127,124	127,311
Non-current assets	6,420	6,206	6,029	5,852	5,665
Current liabilities	35,018	37,751	44,248	39,670	39,611
Non-current liabilities	800	800	800	800	800

a 'Equity' is the residual interest in assets after deduction of liabilities.

Prepared on Australian Accounting Standards basis.

Table 3.2.3: Budgeted departmental statement of cash flows (for the period ended 30 June)

	Estimated actual 2007–08 \$'000	Budget estimate 2008–09 \$'000	Forward estimate 2009–10 \$'000	Forward estimate 2010–11 \$'000	Forward estimate 2011–12 \$'000
OPERATING ACTIVITIES					
Cash received					
Grants revenue from related entities	108,761	125,859	133,274	111,838	115,056
Interest	5,119	6,866	7,257	7,308	7,334
GST received	9,720	11,299	13,468	11,321	11,679
Other	4,950	2,895	3,166	3,447	3,169
Total cash received	128,550	146,919	157,165	133,914	137,238
Cash used					
Employees	5,804	6,000	6,180	6,366	6,556
Suppliers	115,639	122,952	143,214	130,956	130,095
Total cash used	121,443	128,952	149,394	137,322	136,651
Net cash from or (used by) operating activities	7,107	17,967	7,771	(3,408)	587
INVESTING ACTIVITIES					
Cash received					
Investments	-	-	-	-	-
Total cash received	-	-	-	-	-
Cash used					
Purchase of property, plant and equipment	700	400	400	400	400
Investments	-	20,000	5,000	-	-
Other	2,406	1,924	1,500	-	-
Total cash used	3,106	22,324	6,900	400	400
Net cash from or (used by) investing activities	(3,106)	(22,324)	(6,900)	(400)	(400)
Net increase or (decrease) in cash held	4,001	(4,357)	871	(3,808)	187
Cash at the beginning of the reporting period	4,600	8,601	4,244	5,115	1,307
Cash at the end of the reporting period	8,601	4,244	5,115	1,307	1,494

Prepared on Australian Accounting Standards basis.

Table 3.2.4: Departmental statement of changes in equity—summary of movement (Budget year 2008–09)

	Retained earnings	Asset revaluation reserve	Other reserves	Contributed equity/capital	Total equity
	\$'000	\$'000	\$'000	\$'000	\$'000
Opening balance as at 1 July 2008					
Balance carried forward from previous period	10,445	2,832	63,319	-	76,596
Adjustment for changes in accounting policies	-	-	-	-	-
Adjusted opening balance	10,445	2,832	63,319	-	76,596
Income and expense					
Surplus (deficit) for the period	14,620	-	-	-	14,620
Total income and expenses recognised directly in equity	14,620	-	-	-	14,620
Transfers between equity components	(9,976)		9,976		-
Estimated closing balance as at 30 June 2009	15,089	2,832	73,295	-	91,216

Prepared on Australian Accounting Standards basis.