Australian Government

Rural Industries Research and Development Corporation

Annual Operational Plan 2008–09

www.rirdc.gov.au

ISSN: 1440 2025
Publication number 08/085

Rural Industries Research and Development Corporation
Annual Operational Plan 2008–09

Address:
Level 2
15 National Circuit
Barton ACT 2600
PO Box 4776
Kingston ACT 2604

Phone 02 6271 4100
Fax 02 6271 4199
Email rirdc@rirdc.gov.au
Web www.rirdc.gov.au

Our Vision

A more profitable, dynamic and sustainable rural sector

Our Mission

To maximise the knowledge outcomes for industry and government from our R&D investments in:

- new rural industries
- established rural industries
- national rural issues

Our Values

In delivering our mission we are:

- professional
- inclusive
- responsive
- innovative

RIRDC's Climate Change and Variablity Program (see p. 95) will conduct a review of future key research priorities for rural industries in carbon mitigation and its relevance to the proposed emissions trading scheme

Contents

Our Profile

Purpose

This Rural Industries Research and Development Corporation (RIRDC) Annual Operational Plan presents RIRDC's planned research and development (R&D) investments and corporate expenditure for 2008–09.

Enabling legislation and directives from Government

RIRDC's enabling legislation is the *Primary Industries and Energy Research and Development Act 1989* (Commonwealth Government of Australia) (the PIERD Act 1989), see Appendix G on page 111.

The RIRDC Board is accountable to the Parliament of Australia through the Minister for Agriculture, Fisheries and Forestry.

Responsible Minister

The Hon. Tony Burke, MP
Australian Government Minister for Agriculture, Fisheries and Forestry

RIRDC Board

Chairperson: Ms Mary Boydell
Deputy Chairperson: Mr Steve Marshall

Managing Director: Dr Peter O'Brien

Non Executive Directors:
Mr Robert Boshammer
Ms Lindy Hyam
Dr Andrew Johnson
Mr John Lawrenson
Mr Norman McAllister

The rapid rise in food prices has caught the world's attention and has been labelled a 'silent tsunami' by The Economist *magazine (2008) A RIRDC report titled* High Food Prices—Causes, implications and solutions *by Andy Stoeckel (Pub. No. 08/100) analyses the underlying causes of these trends by examining the changes in demand and supply in agricultural markets. The implications of these changes are assessed, and policy solutions to ensure that food supplies are adequate, produced at least cost and reliable, are discussed.*

Preface

2008–09 is a very significant year for RIRDC for two reasons.

First, it is the twentieth year of operation of the Corporation and 20 years since the Government introduced the rural research and development corporation model. This industry–government partnership has succeeded in driving the productivity and sustainability of rural industries and communities. RIRDC remains strongly committed to delivering knowledge outcomes for Australia through our industry and government stakeholders.

Secondly, 2009 is a celebration of the 10th year of the RIRDC Rural Women's Award. Over the decade, the Corporation has recognised and rewarded more than 150 outstanding rural women—acknowledging their contributions and giving them training and resources to pursue their vision. It is a life-changing investment in the human capacity of rural Australia that RIRDC is extremely proud of. A reunion of past winners will be part of RIRDC's celebration of the achievements of our rural women.

In 2008–09 RIRDC has applied its new investment framework by:
- identifying strategic issues that should shape 2008–09 research and development investments
- reviewing performance against our corporate and sectoral five-year research and development plans
- developing and testing business cases for investment
- assembling three portfolios for research and development investment that will best deliver on our objectives.

The result, detailed in this plan, is that RIRDC will re-allocate resources in 2008–09 to respond to strategic opportunities and apply its investments to areas assessed as potentially more beneficial.

We propose targeted investments to contribute to an overall outcome of a more profitable, sustainable and dynamic rural sector in three key areas:
- new rural industries (p. 25)
- established rural industries (p. 46)
- national rural issues (p. 75)

While extensive rainfall and record commodity prices have been welcomed by many of Australia's rural industries, for others drought and climate change dominate in RIRDC's R&D portfolios. Their impact is compounding—driving down production, reducing revenue for research and development and putting pressure on R&D capacity. RIRDC's objective is to sustain R&D investments through prudent application of our reserves policy. In this coming year, the Corporation is particularly focused on ensuring that core R&D priorities and capacity are sustained in our rice and fodder industries.

RIRDC's R&D generates innovations to help rural Australians capture opportunity and manage change. The Government has identified key areas of challenge and opportunity for rural Australia that we are responding strongly to such as:
- **Climate Change and Variability**—a new program of R&D into mitigation and measurement as part of a broader collaboration to position rural Australia for an emissions trading environment. We will also continue work to identify new rural industry opportunities to assist in adaptation. (See p. 95)
- **Bioenergy, Bioproducts and Energy**—an expanded program to position rural Australia to benefit from market opportunities in a global context. (See p. 42)
- **Other initiatives**—RIRDC will provide analysis, advice and R&D to support other government initiatives including Indigenous rural development, northern Australia rural development, a review of managed investment schemes, and a new rural women's network.

Through the work of the Research and Development Corporation Chairs and the Primary Industries Standing Committee, a new nationally coordinated approach to rural R&D is developing rapidly. RIRDC is strongly supportive of this momentum and is actively participating in nationally coordinated planning in its industry and cross-sectoral activities.

In 2008–09 RIRDC will manage and partake in a number of collaborative programs and projects (see pages 14 and 15). These partnerships will ensure that RIRDC works closely with other RDCs, research providers, industry and co-investors to produce results and encourage uptake of research.

Finally, in 2008–09 RIRDC will begin a new 'Emerging Rural Issues' Program (p. 98). Our purpose is to identify and scope emerging rural issues with implications for our industry and government stakeholders. RIRDC looks forward to a challenging and productive 2008–09, confident that our activities are aligned with the knowledge needs of our industry and government clients.

Mary Boydell
Chairperson

Peter O'Brien
Managing Director

RIRDC's Corporate Plan

Goals

New Rural Industries
Provide the knowledge for diversification in Australia's rural industries

Established Rural Industries
Provide the knowledge to increase the profitability, resilience and sustainability of RIRDC's established rural industries

National Rural Issues
Provide the knowledge to address national rural issues.

Strategies

To invest in R&D for new rural industries:
- That have significant market opportunities
- Where Australian industry has a competitive advantage
- That provide an opportunity for producers to enter and expand the industry

To invest in R&D for RIRDC's established rural industries:
- In areas identified by Government and industry as high priority
- That promote development and uptake of innovative technologies and solutions

To invest in R&D in the national interest to support:
- Rural policy priorities of Government
- Priorities of rural industries and communities
- Topics that are cross-sectoral, or multi-industry

ENABLING STRATEGIES

We will:
- Ensure priorities are industry and Government–driven
- Ensure adoption by design
- Ensure effective provider capacity
- Build strategic partnerships.

These corporate strategies will be underpinned by:
- Excellence in research management
- Excellence in corporate services
- Good governance.

Measures of Success

- Sector five-year R&D plans are meeting their objectives to provide the knowledge for diversification in Australia's rural industries
- We generate knowledge that supports diversification in Australia's rural industries, and meets the needs of new rural industries
- We can demonstrate a high level of support from industry and Government stakeholders through regular stakeholder surveys and continuing investment
- RIRDC's knowledge investments lead to adoption of new technologies and industries, demonstrated by client surveys and program evaluations

- Sector five-year R&D plans are meeting their objectives to provide the knowledge to increase the profitability, resilience and sustainability of RIRDC's established rural industries.
- We generate knowledge that meets the needs of established rural industries to increase their profitability, resilience and sustainability
- We can demonstrate a high level of support from industry and Government stakeholders through regular stakeholder surveys and continuing investment
- RIRDC investment leads to the adoption of knowledge to increase the profitability, resilience and sustainability of RIRDC's established rural industries, demonstrated by client surveys and program evaluations

- Sector five-year R&D plans are meeting their objectives to provide the knowledge to address national rural issues
- We generate knowledge to meet the needs of industry, community and Government to address national rural issues
- We can demonstrate a high level of support from partners through regular stakeholder surveys and continuing co-investment
- RIRDC's investments lead to the adoption of knowledge to address national rural issues, demonstrated by client surveys and program evaluations

OUR MISSION

To maximise the knowledge outcomes from our R&D investments for Australian industries and government in:

- new rural industries
- established rural industries
- national rural issues.

OUR OUTCOME

A more profitable, dynamic and sustainable rural sector.

MEASURES OF SUCCESS

We will know we are successful when:

- There is a high level of adoption of knowledge generated by RIRDC's R&D investments
- Evaluation of individual projects, programs and portfolios show a strongly positive return on investment
- RIRDC's R&D investments address the Government's National and Rural Research Priorities
- RIRDC's R&D investments address the priorities of industry partners
- RIRDC has substantial and significant collaborative partnerships with other research investment agencies that optimise the use of resources and opportunities
- RIRDC's governance framework, policies and practices comply with all statutory and government requirements
- Our research management processes and our corporate service performance exceed benchmarks and stakeholder expectations
- Quality research providers are available to address the range of RIRDC's R&D priorities.

Executive summary

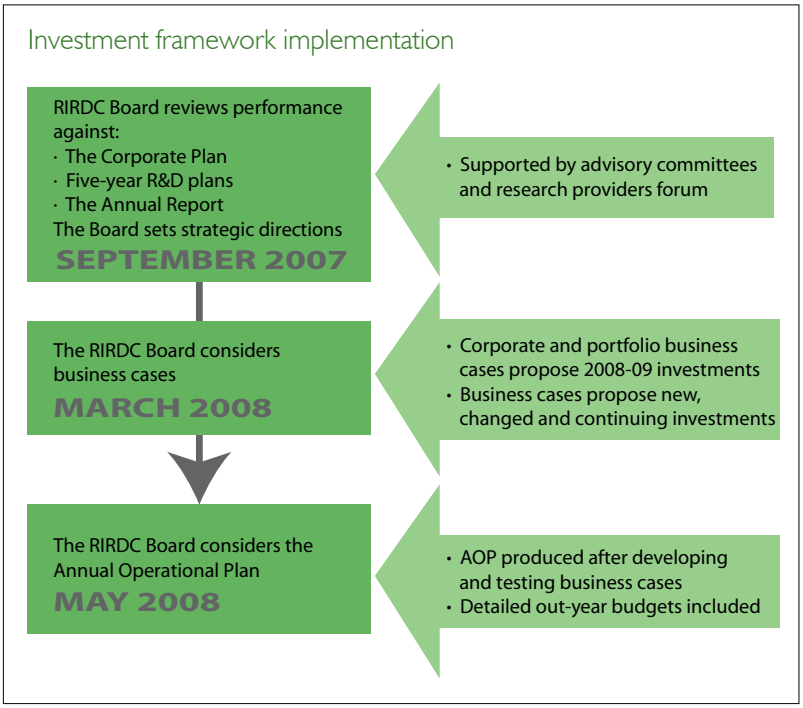
This Annual Operational Plan sets out RIRDC's planned investments for 2008–09 to implement its *Corporate Plan 2007–2012*. RIRDC contributes to the productivity and sustainability of rural Australia through innovation by working with industry and government. In doing this we generate the knowledge to help rural industries and communities to capture opportunity and manage change. Growing the productivity and sustainability of rural industries through innovation is a key driver of the prosperity and resilience of rural Australia.

To determine which investment areas and amounts best deliver on our objectives, we have applied our investment framework.

Investment framework

The main elements of RIRDC's investment framework are:

- an annual review of performance against the Corporate Plan
- setting strategic directions for the coming year
- preparing portfolio business cases with input from RIRDC's R&D Advisory Committees (p. 110) through an annual review of progress against their five-year R&D plans
- developing and testing business cases for investment
- funding allocations for this Annual Operational Plan
- aligning program strategies within portfolios against R&D five-year plans, and allocating pre-determined budgets that are funded subject to performance
- implementing programs through a combination of open call and commissioned projects.



Responding to Government priorities

Collaborative Partnerships

The Australian Government Minister for Agriculture, Fisheries and Forestry, the Hon. Tony Burke, MP has highlighted the need for Research and Development Corporations to collaborate to maximise the benefits from resources applied to agricultural research and development.

RIRDC's Operational Plan for 2008–09 identifies strong collaborative partnerships with RDCs and other R&D investors and providers (see page 14 for more details). Some of these include:

- Bioenergy, Bioproducts and Energy Program (p. 42)
- Agroforestry and Farm Forestry – Joint Venture Agroforestry Program (p. 77)
- RIRDC Rural Leadership Program (p. 91)
- RIRDC Rural Women's Award (p. 91)
- Collaborative Partnership for Farming and Fishing Health and Safety (p. 93)
- Emerging Rural Issues Program (p. 98)
- National Climate Change Research Strategy for Primary Industries (p. 95)
- Pollination Australia (p. 53)
- Corporate collaboration (p. 100)

Strategic issues for RIRDC

RIRDC's operating environment, and that of our rural industries, is complex and dynamic. Over the life of this plan, RIRDC will help Australia's rural industries and communities respond to a range of challenges and help them to capture opportunities. In identifying these challenges and opportunities, RIRDC has been informed by:

- our rural industries through RIRDC's R&D Advisory Committees (p. 110)
- the Australian Government
- the National and Rural Research Priorities (p. 12, 104-107)
- research providers, through regular consultation.

Key elements of the 2008–09 Annual Operational Plan

In 2008–09, the Corporation is budgeting for a consolidated net deficit of $1.5m.

The $1.5m deficit is funded from a $1.6m draw-down of industry reserves that have been partly offset by a net core surplus of $0.1m. The estimated reserve position at the end of 2008–09 (with the forecast loss of $0.5m in 2007–08) will be $8.1m. This is represented by industry reserves of $7.2m and a core reserve of $0.9m.

On consolidation, the total budgeted revenue has decreased by $1.0m to $22.9m in 2008–09, compared to the 2007-08 budgeted revenue of $23.9m. This net decrease is primarily attributable to the following:

- decrease in levy revenue of $0.3m
- decrease in Commonwealth contributions of $0.4m
- decrease in external contributions of $0.4m.

On consolidation, the total budgeted expenditure in 2008–09 has decreased by $0.8m to $24.4m in 2008–09, compared to the 2007–08 budgeted expenditure of $25.2m. This net decrease is primarily attributable to reduced R&D expenditure.

Retained Surplus Position

	2007-08	2007-08 Forecast			2007-08	2008-09	2008-09 Budget						2008-09
Portfolio	Opening Retained Surplus	RIRDC Core Contribution	Total Income	Total Expenditure	Closing Retained Surplus	Opening Retained Surplus	RIRDC Core Contribution	Var to 2007-08	Total Income	Var to 2007-08	Total Expenditure	Var to 2007-08	Closing Retained Surplus
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	%	$'000	%	$'000	%	$'000
New Industries	764	4,708	6,601	6,480	885	951	4,899	4.1%	6,936	5.1%	7,109	9.7%	778
Established Industries	8,519	1,119	7,237	8,418	7,338	7,273	1,522	36.0%	6,899	(4.7%)	8,167	(3.0%)	6,005
National Rural Issues	580	3,652	5,378	5,348	610	610	3,557	(2.6%)	5,127	(4.7%)	5,312	(0.7%)	425
Corporate Management	254	3,936	4,206	3,679	782	782	3,452	(12.3%)	3,904	(7.2%)	3,768	2.4%	917
Total	**10,117**	**13,415**	**23,423**	**23,925**	**9,615**	**9,615**	**13,430**	**0.1%**	**22,866**	**(2.4%)**	**24,356**	**1.8%**	**8,125**

Note: The opening reserves in 2008–09 have been adjusted by portfolio to reflect program movements between portfolios

Key initiatives in RIRDC's Portfolios in 2008–09

Research, development and adoption drives productivity growth and sustainability in RIRDC industries. The time from identifying a problem or opportunity to wide adoption of a solution can vary widely—from six months where RIRDC commences short term analysis to support trade negotiations—to ten years when we have managed the development of new rice varieties or poultry vaccines.

Each of the industries' objectives and KPIs are identified in their sectoral five-year plans and in any one year the Corporation reports on outcomes as identified in these plans. As such, investments are made on a rolling basis and outputs and outcomes will not necessarily match-up in any given year. See Appendix B, p. 104 for more information.

New Rural Industries (see page 25 for more information)

Capacity in new rural industries—both in R&D and in the industries themselves—has been identified as a critical issue in our consultations with industry and research providers.

In response, in 2008–09 RIRDC will initiate new R&D centres of excellence to enhance R&D capacity for our new and emerging industries.

RIRDC will also begin new activities to build capacity in new industries: establishing an online information centre; hosting a forum on critical success factors; and bring new industry leaders together for an information exchange.

RIRDC will also examine our strategies, structure and funding of new, small and emerging industries in 2008–09 with a view to adopting a greater industry development focus in the Portfolio.

Key deliverables for New Rural Industries

- **enhanced R&D capacity for new rural industries**—initiate Centres of Excellence in Research and Development for the New Plant Products and New Animal Products programs through a consortium approach of research agencies on a competitive basis
- **increased human capacity in new rural industries**—target capacity-building issues, including holding a new industries forum and leaders' summit
- **more rapid adoption of new industry innovations**—instigate a New Crops On Line Information Centre and assess the feasibility of initiating a New Animal Industries On Line Centre
- **diversification options in the prospective biofuels industry**—expand the program and develop a new five-year plan for the Bioenergy, Bioproducts and Energy Program
- **targeted, industry-driven R&D**—develop a new five-year plan for the Rare Natural Animal Fibres Program on the basis of strong industry partnership
- **innovation to meet new industry needs**—operate the New Animal Products, Tea Tree Oil, Essential Oils and Plant Extracts, Wildflowers and Native Plants Programs so that they continue to meet five-year plan goals and objectives
- **a strategic approach to new rural industries development**—review the strategy, structure and funding of the Portfolio with a focus on industry development.

Established Rural Industries (see page 46 for more information)

For the Established Rural Industries Portfolio, drought continues to be a significant driver, especially in the rice industry. RIRDC's levy revenue is production based and the continuing low production in drought reduces levy revenue. The Corporation will

The Methane to Markets Program in Portfolio 1 (p. 42) is an externally funded collaborative program with the Department of Agriculture, Fisheries and Forestry, Dairy Australia, Australian Pork Limited, Meat and Livestock Australia and the Australian Lot Feeders' Association. Its goal is to encourage and enable development, adaptation and use of methane capture and use technology in the Australian intensive livestock industries

continue to draw down reserves, consistent with the reserves policy, to sustain critical R&D. Our long-term approach to large, non-levy based industries is a strategic issue and the Corporation has decided to cap contributions to matching voluntary levies to provide funds for other activities in new and cross-sectoral R&D. In 2008–09 RIRDC will work to implement Pollination Australia, an industry/government consortium to ensure that Australia's pollination-dependent industries have plans and strategies to maintain pollination services.

Key deliverables for Established Rural Industries

- **sustained R&D in major industries through deep drought**—deliver key R&D priorities and meet financial commitments through prudent investment consistent with RIRDC's Reserves Policy to maintain research and development capacity
- **a focused honeybee R&D program**—develop and implement the collaborative Pollination Australia Program
- **targeted industry-driven R&D programs**—develop new five-year plans for the Fodder Crops and Chicken Meat Programs in strong partnership with industry
- **sustainable resourcing of established industry R&D programs**—especially for the Fodder Crops and Rice Programs

National Rural Issues (see page 75 for more information)

RIRDC has an important mandate to pursue cross-sectoral R&D—the issues that impact widely on rural Australia—and so in 2008–09 we will be engaging our key industry and government stakeholders and focusing our activities in this portfolio. For the National Rural Issues Portfolio new initiatives are proposed in:

- **climate change**—focused on mitigation and measurement
- **the Emerging Rural Issues Program**—a new foresighting program to identify and scope emerging rural issues for our industry and government stakeholders.

Key deliverables for National Rural Issues

- **a focused National Rural Issues Portfolio**—develop government and industry stakeholder engagement on key strategic areas with increased co-investment from partners
- **emerging rural issues identified and scoped for our industry and government stakeholders**—instigate and develop a new foresighting program called the Emerging Rural Issues Program
- **innovation to address national rural issues**—develop a plan for new investment in the Climate Change and Variability Program
- **development of major R&D opportunities in carbon sequestration**—review the Agroforestry and Farm Forestry Program in the context of climate change and emissions trading
- **targeted, stakeholder-driven R&D**—develop new five-year plans for the Global Competitiveness and the RIRDC Rural Leadership programs
- **leveraged R&D investment in priority areas**—increase co-investment in the Collaborative Partnership for Farming and Fishing Health and Safety.

Corporate Management (see page 100 for more information)

Following three years of intensive business systems and process improvement, Corporate Management will focus in 2008–09 on:

- consolidation and review of Corporation policies
- implementing the Protective Security Manual
- completing full implementation of the web-based portfolio management system
- implementing the outcomes of a review of RIRDC's communications activities.

Key deliverables across the Corporation

Governance

- implement the Protective Security Manual
- consolidate and review Corporation policies

Finance and administration

- implement improved financial and operational performance reporting
- integrate the web-based portfolio management system into the investment and evaluation frameworks

Human resources

- implement learning and development programs that support staff development and align the skill set of individuals with the Corporation's evolving human resources needs
- implement metrics for analysis of human resource functions

Communications

- implement the outcomes of the communications review
- integrate RIRDC's website with the Corporation's knowledge base and also as our publications interface

Cross-portfolio activity

- implement the evaluation framework at project, program, portfolio and Corporation levels

Broader accountabilities

In addition, RIRDC executives will have key result areas covering:

- the broader human resource, financial and risk management responsibilities of the Corporation's Executive
- corporate contributions as a member of the RIRDC Executive
- modelling and exemplifying RIRDC values and behaviours.

Risk management

The impact of the drought on RIRDC industries, as well as on levy revenue and our capacity to sustain R&D, is a significant risk that we have identified and addressed through the application of our reserves policy and prudent expenditure controls. The Corporation plans to draw down reserves to sustain R&D over 2008–09.

There is also a risk that RIRDC fails to secure external contributions as budgeted—we have identified areas where external contributions are subject to federal budget outcomes and/or negotiations with co-investors and will adjust our plans depending on the outcome.

Australian Government Research Priorities

On 5 December 2002 the Australian Government announced a set of National and Rural Research Priorities and requires the Corporation to report on how we have met them. This section sets out those priorities and shows tables with RIRDC's R&D expenditure for 2008–09 aligned to the Government research priorities. The Rural Research priorities were reviewed and a new set was announced by the Minister for Agriculture, Fisheries and Forestry on 8 May 2007.

How RIRDC addresses the Government's research priorities

The National and Rural Research Priorities of the Australian Government provide an over-arching framework for public investment in rural research and development. RIRDC's Annual Operational Plan 2008–09 is closely aligned with these priorities. A table of projects aligned to the Government's National and Rural Research Priorities can be found at Appendix B on page 104.

RIRDC addresses the Government's priorities in the following manner:

- both the current and previous Five-Year Corporate Plans have the Government's priorities built into their strategies, including the establishment of specific programs to address particular priorities. The current Corporate Plan specifies RIRDC strategies that will contribute to these priorities
- the five-year R&D plans for individual programs address the Government's priorities
- RIRDC's annual advice to researchers on doing business with the Corporation includes reference to the Government's priorities. This information can be found on RIRDC's website <www.rirdc.gov.au/business>.

RIRDC's annual reports and annual operational plans have sections reporting on the outcomes from RIRDC investments that contribute to the priorities.

The National Research Priorities:

A an environmentally sustainable Australia
- A1 water— a critical resource
- A2 transforming existing industries
- A3 overcoming soil loss, salinity and acidity
- A4 reducing and capturing emissions in transport and energy generation
- A5 sustainable use of Australia's biodiversity
- A6 developing deep earth resources
- A7 responding to climate change and variability

B promoting and maintaining good health
- B1: a healthy start to life
- B2: ageing well, ageing productively
- B3: preventive health care
- B4: strengthening Australia's social and economic fabric

C frontier technologies for building and transforming Australian industries
- C1: breakthrough science
- C2: frontier technologies
- C3: advanced materials
- C4: smart information use
- C5: promoting an innovation culture and economy

D safeguarding Australia
- D1: critical infrastructure
- D2: understanding our region and the world
- D3: protecting Australia from invasive diseases and pests
- D4: protecting Australia from terrorism and crime
- D5: transformational defence technologies

The Rural Research Priorities:

- productivity and adding value
- supply chain and markets
- natural resource management
- climate variability and climate change
- biosecurity
- improve the skills to undertake research and apply its findings
- promote the development of new and existing technology

Allocation of RIRDC's R&D expenditure 2008–09 to Government research priorities

National Research Priorities

National Research Priorities		RIRDC Portfolio 1 ($'000)	RIRDC Portfolio 2 ($'000)	RIRDC Portfolio 3 ($'000)	Total ($'000)	Total (%)
An environmentally sustainable Australia A1: water— a critical resource	A1	-	159	12	171	0.83
A2: transforming existing industries	A2	2,310	1,065	400	3,775	18.34
A3: overcoming soil loss, salinity and acidity	A3	-	-	932	932	4.53
A4: reducing and capturing emissions in transport and energy generation	A4	215	384	-	599	2.91
A5: sustainable use of Australia's biodiversity	A5	366	60	879	1,305	6.34
A6: Developing deep earth resources	A6	-	-	-	-	-
A7: Responding to climate change and variability	A7	-	-	600	600	2.91
Promoting and maintaining good health B1: a healthy start to life	B1	-	-	-	-	-
B2: ageing well, ageing productively	B2	87	13	-	100	0.49
B3: preventive healthcare	B3	581	1,136	420	2,137	10.38
B4: strengthening Australia's social and economic fabric	B4	-	-	244	244	1.19
Frontier technologies for building and transforming Australian industries C1: breakthrough science	C1	2,239	2,632	-	4,871	23.66
C2: frontier technologies	C2	495	1,280	523	2,298	11.16
C3: advanced materials	C3	-	-	-	-	-
C4: smart information use	C4	-	-	974	974	4.73
C5: Promoting an innovation culture and economy	C5	816	-	46	862	4.19
Safeguarding Australia D1: critical infrastructure	D1	-	-	-	-	-
D2: understanding our region and the world	D2	-	-	-	-	-
D3: protecting Australia from invasive diseases and pests	D3	-	1,438	282	1,720	8.34
D4: protecting Australia from terrorism and crime	D4	-	-	-	-	-
D5: transformational defence technologies	D5	-	-	-	-	-
Total		7,109	8,167	5,312	20,588	100

Rural Research Priorities

Priorities	Portfolio 1 ($'000)	Portfolio 2 ($'000)	Portfolio 3 ($'000)	Total ($'000)	Total (%)
1. Productivity and adding value	3 156	3 120	2 008	8 284	40.23
2. Supply chain and markets	193	177	294	664	3.23
3. Natural resource management	321	1 027	1 153	2 501	12.15
4. Climate variability and climate change	565	1 015	1 079	2 659	12.92
5. Biosecurity	93	1 267	8	1 368	6.64
6. Improve the skills to undertake research and apply its findings	719	569	555	1 843	8.95
7. Promote the development of new and existing technology	2 062	992	215	3 269	15.88
Total	7 109	8 167	5 312	20 588	100

Collaboration

RIRDC's Operational Plan for 2008–09 identifies strong collaborative partnerships with RDCs and other R&D investors and providers. Some of these include:

- The **Bioenergy, Bioproducts and Energy Program** (See page 42 for more details) has four major subprogram areas:
  - a core R&D subprogram on **Bioenergy, Bioproducts and Energy**, which aims to meet Australia's research and development needs for the development of sustainable and profitable bioenergy and bioproducts industries. It is funded by RIRDC core funds provided by the Australian Government and some voluntary industry revenue
  - **Bioenergy Australia**, an alliance of about 65 government, research and industry organisations. Its goal is to foster the development and use of biomass for sustainable production of energy, transport fuels, chemicals and other value-added products. It functions as a research networking and coordination arm of the program and is funded by the contributions of its members
  - **Methane to Markets** is an externally funded collaborative program, with the Department of Agriculture, Fisheries and Forestry, Dairy Australia, Australian Pork Limited, Meat and Livestock Australia and the Australian Lot Feeders' Association. Its goal is to encourage and enable development, adaptation and use of methane capture and use technology in the Australian intensive livestock industries
  - a **collaborative R&D corporation program on Energy in Agriculture** with funding from RIRDC, Australian Pork Limited, Meat and Livestock Australia, Cotton Research and Development Corporation, Sugar Research and Development Corporation, the Australian Chicken Meat Federation and the Grains Research and Development Corporation. It aims, in the first instance, to:
    - develop an agreed methodology to undertake life cycle assessments for energy, greenhouse emissions and water use
    - assess the energy efficiency of Australian agricultural systems.
- the **Joint Venture Agroforestry Program**—a collaborative partnership comprising RIRDC, Land & Water Australia, and Forest and Wood Products Australia with funding for some activities from the Australian Government Department of Agriculture, Fisheries and Forestry, the Murray–Darling Basin Commission, and the Department of Environment and Heritage Australian Greenhouse Office. See page 77 for more details.
- the **RIRDC Rural Leadership Program – the RIRDC Rural Women's Award**—this award is managed and mainly funded from RIRDC core funds. However, collaboration and funding is received from external sources including the Department of Agriculture, Fisheries and Forestry, the Department of Infrastructure, Transport, Regional Development and Local Government, the Office for Women. See page 91 for more details.

Agroforestry is the intersection of forestry, agriculture and natural resource management

- the **Collaborative Partnership for Farming and Fishing Health and Safety**—a collaborative partnership comprising RIRDC, the Department of Health and Ageing, Grains Research and Development Corporation, Fisheries Research and Development Corporation, Sugar Research and Development Corporation and Cotton Research and Development Corporation. See page 93 for more details.
- the **Emerging Rural Issues Program**—presently funded from RIRDC core funds. However, this Program will explore forecasting as a cross-RDC collaborative activity, that will complement RIRDC's research program into mature issues. The National Rural Issues Portfolio has already undertaken work of this nature. *The Social and Economic Impacts of Water Trading* is one such project, and work funded through the Australian Farm Institute, such as *Implications for Australian Agriculture of Changing Demand for Animal Protein Needs in Asia*, is another example. See page 98 for more details.

RIRDC's report Living Longer on the Land—Sustainable Farm Families in Broadacre Agriculture *(Pub. No. 08/048) provides a glimpse of the current health status of rural farming families. It increases our understanding of what affects farming families' health and identifies measures to improve their health, well-being and safety.*

- the national **Climate Change Research Strategy for Primary Industries**—as well as collaborating on improving seasonal forecasting, RIRDC is implementing a new program – **Climate Change and Variability** - focused on mitigation and measurement of greenhouse gases in agriculture. This new work will provide crucial information to support agriculture in an emissions trading scheme. We will also work to identify new rural industry opportunities to assist in adaptation. See page 95 for more details.
- **Pollination Australia**—through our Honeybee Program, RIRDC manages and supports *Pollination Australia* – a newly formed cross-industry alliance of the honeybee industry and a number of horticultural, and plant-based industries that are dependent on pollination. Funding support comes from RIRDC, the Department of Agriculture, Fisheries and Forestry and Horticulture Australia Limited. See page 53 for more details.
- **Corporate collaboration**—in addition to research and development collaborations RIRDC will work with other RDCs to improve our efficiency and effectiveness in business operations, particularly on portfolio and project management, evaluation and development of common platforms. In 2006–07 RIRDC partnered with other RDCs to procure the project management system Clarity. In 2008–09 we will continue working with these RDCs to further develop common platforms. We will also contribute evaluation results to help build a complete picture of the impact and return from rural investment for industry and government stakeholders. See page 100 for more details.
- **Other initiatives**—RIRDC will also provide analysis, advice and R&D to support other government initiatives, including indigenous rural development, northern Australia agricultural development, a review of managed investment schemes, and a new rural women's network.

RIRDC 2008–09 budget

Table 1: Budgeted income statement[1]

	2007-08 Budget $	2008-09 Budget $	Notes
Income			
Commonwealth Appropriations	13,415,000	13,430,000	
Commonwealth Contributions	3,001,694	2,610,000	
External Contributions	4,407,982	4,017,000	
Statutory Industry Levies	2,120,288	1,804,000	
Other Income	996,360	1,004,950	
Gains	-	-	
Total Income	**23,941,324**	**22,865,950**	
R&D Expenditure			
New Rural Industries			
New Plant Products	*2,243,763*	*1,805,000*	
New Animal Products	*1,230,000*	*1,380,000*	2
Essential Oils and Plant Extracts	*409,116*	*550,000*	
Rare Natural Animal Fibres	*270,000*	*298,000*	
Wildflowers and Native Plants	*216,000*	*496,000*	
Tea Tree Oil	*391,349*	*404,950*	
Bioenergy , Bioproducts and Energy	*1,340,000*	*971,000*	3
RESEARCH	6,100,228	5,904,950	
Advisory Committee Expenses	114,364	102,400	
External Research Management	319,000	292,000	
Employee Expenditure	448,753	513,946	
Communications	78,325	113,600	
Program Development	-	-	
Other Expenses	75,825	112,200	
Program Management Fees	70,100	70,100	
Total New Industries	**7,206,595**	**7,109,196**	
Established Industries			
Chicken Meat	*2,800,000*	*3,200,000*	
Honeybees	*562,000*	*550,000*	
Rice	*2,000,000*	*990,000*	
Horses	*1,100,000*	*1,000,000*	
Fodder Crops	*375,000*	*390,000*	
Pasture Seeds	*450,000*	*350,000*	
Deer	*350,000*	*200,000*	
Buffalo	*50,000*	-	4
Organics	-	*340,000*	5
RESEARCH	7,687,000	7,020,000	
Advisory Committee Expenses	186,200	181,000	
External Research Management	148,978	187,000	
Employee Expenditure	291,724	322,367	
Communications	117,500	160,000	
Program Development	-	-	
Other Expenses	109,747	108,500	
Program Management Fees	187,275	188,000	
Total Established Industries	**8,728,424**	**8,166,867**	

	2007-08 Budget $	2008-09 Budget $	Notes
Income			
Agroforestry & Farm Forestry	*890,940*	*780,000*	
Environment & Farm Management	*420,000*	*235,000*	
Rangeland & Wildlife Systems	*410,000*	*170,000*	
Organics	*360,000*	-	6
Global Competitiveness	*450,000*	*634,000*	
Food Integrity and Biosecurity	*387,292*	*149,000*	
Rural People and Learning Systems	*490,500*	*473,000*	
RIRDC Rural Leadership Program	*520,000*	*635,000*	
Cooperative Venture for Capacity Building	*138,000*	-	
Farming & Fishing Health & Safety	*330,000*	*435,000*	
Climate Change and Variability	*100,000*	*600,000*	7
Emerging Rural Issues	-	*250,000*	
RESEARCH	4,496,732	4,361,000	
Advisory Committee Expenses	90,500	31,000	
External Research Management	114,250	195,000	
Employee Expenditure	283,429	233,652	
Communications	262,500	170,000	
Program Development	-	-	
Other Expenses	63,000	31,000	
Program Management Fees	263,000	290,000	
Total National Rural Issues	**5,573,411**	**5,311,652**	
Consolidated R&D Expenditure			
RESEARCH	**18,283,960**	**17,285,950**	
Advisory Committee Expenses	**391,064**	**314,400**	
External Research Management	**582,228**	**674,000**	
Employee Expenditure	**1,023,906**	**1,069,965**	
Communications	**458,325**	**443,600**	
Program Development	**-**	**-**	
Other Expenses	**248,572**	**251,700**	
Program Management Fees	**520,375**	**548,100**	
Total R&D Expenditure	**21,508,430**	**20,587,715**	
Corporate Management			
Communications	528,722	498,300	
Human Resource Management	211,209	197,500	
Information & Communications Technology	359,248	301,900	
Governance	1,337,415	1,458,300	
Finance	1,280,544	1,312,235	
Total Corporate Management	**3,717,138**	**3,768,235**	
Total Expenditure	**25,225,568**	**24,355,950**	
Operating Result	**(1,284,244)**	**(1,490,000)**	8

Table 1. Explanatory notes

1. Refer to detailed program budget statements included with each program overview
2. New animal Products Program—The Buffalo Program has moved from Portfolio 2 to Portfolio 1 in 2008–09 and is now included in the New Animal Products Program
3. Includes Bioenergy, Bioproducts and Energy; Methane to Markets; and Bioenergy Australia
4. See note 2
5. The Organics Program has moved from Portfolio 3 to Portolio 2
6. See note 5
7. The CVCB Program will not operate in 2008–09
8. At the time of the Portfolio Budget Statement estimates, the 2008–09 estimated loss had not been approved by the Minister for Finance.

Budgeted accumulated position

Portfolio/Program	Actual Accumulated Results 1 July 2007 $	Forecast Qtr 3 Operating Result 2007-08 $	Forecast Qtr 3 Accumulated Results 30 June 2008 $	Forecast Qtr 3 Accumulated Results 1 July 2008 $	AOP Budget Accumulated Results 2008-09 $	AOP Budget Accumulated Results 30 June 2008 $
New Rural Industries						
Kangaroos	*354,576*	*20,178*	*374,754*	*374,754*	*(86,600)*	*288,154*
Ratite	*20,315*	*(5,291)*	*15,024*	*15,024*	*500*	*15,524*
Buffalo[3]	*0*	*0*	*0*	*65,673*	*(18,000)*	*47,673*
New Animal Products	374,891	14,887	389,778	455,451	(104,100)	351,351
Rare Natural Animal Fibres (Goats)	74,874	(38,229)	36,645	36,645	(12,700)	23,945
Tea Tree Oil	0	(0)	(0)	(0)	0	(0)
Bioenergy	314,245	144,440	458,685	458,685	(56,000)	402,685
	764,010	**121,098**	**885,108**	**950,781**	**(172,800)**	**777,981**
Established Rural Industries						
Chicken Meat	3,543,745	(1,000)	3,542,745	3,542,745	(366,000)	3,176,745
Honeybee	483,606	(175,689)	307,917	307,917	26,000	333,917
Rice	2,357,774	(655,500)	1,702,274	1,702,274	(646,000)	1,056,274
Horses	501,135	(31,100)	470,035	470,035	(102,000)	368,035
Fodder Crops	296,319	(54,000)	242,319	242,319	1,000	243,319
Pasture Seeds	643,580	(120,500)	523,080	523,080	(66,000)	457,080
Deer	640,237	(156,000)	484,237	484,237	(115,000)	369,237
Buffalo	52,683	12,990	65,673	0	0	0
	8,519,079	**(1,180,799)**	**7,338,280**	**7,272,607**	**(1,268,000)**	**6,004,607**
National Rural Issues						
Agroforestry & Farm Forestry[1]	322,065	(45,300)	276,765	276,765	(185,000)	91,765
Cooperative Venture for Capacity Building[2 and 4]	152,145	(152,145)	0	0	0	0
Collaborative Partnership for Farm Health & Safety[2]	105,641	228,000	333,641	333,641	(0)	333,641
	579,851	**30,555**	**610,406**	**610,406**	**(185,000)**	**425,406**
Corporate Management						
RIRDC Core[2]	254,142	527,361	781,503	781,503	135,800	917,303
	254,142	**527,361**	**781,503**	**781,503**	**135,800**	**917,303**
Totals	**10,117,082**	**(501,785)**	**9,615,297**	**9,615,297**	**(1,490,000)**	**8,125,297**

Explanatory notes:

1. Agroforestry & Farm Forestry program retained surplus history of $636,310 has been restated to two programs Bioenergy $314,245 and Agroforestry $322,065
2. HCC program retained surplus of $260,580 has been restated to three programs Cooperative Venture for Capacity Building of $152,145, Farm Health and Safety of $105,641 and Core of $2,794
3. Buffalo moved from Portfolio 2 to Portfolio 1 in 2008-09
4. The NRI (CVCB program) forecast has changed since the quarterly report as the corporation reduced the core contribution to this program in line with forecast program
   spend. This action reduced the CVCB retained surplus to zero at the end of 2007-08 (in line with the program closing) and increased the core surplus by the corresponding amount of $86k.

Table 2: Budgeted balance sheet

	2007/2008 Budget $'000	2008/2009 Budget $'000
Assets		
Financial Assets		
Cash & Cash Equivalents	7,741,751	9,055,042
Receivables	1,321,466	930,102
Total Financial Assets	**9,063,217**	**9,985,144**
Non-Financial Assets		
Property Plant & Equipment	346,000	281,377
Intangibles	160,000	266,740
Other Non-Financial Assets	75,000	50,000
Total Non-Financial Assets	**581,000**	**598,117**
Total Assets	**9,644,217**	**10,583,261**
Liabilities		
Payables		
Suppliers	339,000	300,000
Research Projects	1,168,596	1,200,000
Other Payables	681,000	200,000
Total Payables	**2,188,596**	**1,700,000**
Provisions		
Employee Provisions	394,000	500,000
Other Provisions	47,273	47,000
Total Provisions	**441,273**	**547,000**
Total Liabilities	**2,629,869**	**2,247,000**
Net Assets	**7,014,348**	**8,336,261**
Equity		
Reserves	210,964	210,964
Retained Surpluses	6,803,384	8,125,297
Total Equity	**7,014,348**	**8,336,261**

Table 3: Budgeted statement of cash flows

	2007-08 Budget $'000	2008-09 Budget $'000
Operating Activities		
Cash Received		
Commonwealth Appropriations	13,415,000	13,631,102
Statutory Industry Levies	2,120,288	1,883,500
Commonwealth Matching Contributions	3,001,694	2,480,000
Goods and Services	107,560	66,750
Interest	714,300	705,700
Other	4,020,489	3,848,898
Total Cash Received	**23,379,331**	**22,615,950**
Cash Used		
Employees	3,266,919	3,329,881
Suppliers	3,378,689	3,055,032
R&D Program	18,033,960	17,576,038
Total Cash Used	**24,679,568**	**23,960,950**
	(1,300,237)	**(1,345,000)**
Investing Activities		
Cash Received		
Proceeds from Sale of Property Plant and Equipment	30,000	-
Total Cash Received	**30,000**	**-**
Cash Used		
Purchase of Property Plant and Equipment	150,000	150,000
Total Cash Used	**150,000**	**150,000**
Net Cash from (used by) Investing Activities	**(120,000)**	**(150,000)**
Net Movement in Cash		
Net Increase (Decrease) in Cash Held	**(1,420,237)**	**(1,495,000)**
Cash at the beginning of the reporting period	9,161,988	10,550,042
Cash at the End of the Reporting Period	**7,741,751**	**9,055,042**

Explanatory Note

1. Cash includes cash at bank and on hand, and deposits at call.

Table 4: Budgeted program funding by source

Portfolio	RIRDC Core Contributions	C'Wealth Contributions	External Contributions	Industry Levies	Other Income	Total Income	Total R&D Expenditure	Non-R&D Expenditure	Total Expenditure	Operating Result
New Industries										
New Plant Products	1,555,000	-	340,000	-	20,000	1,915,000	1,805,000	110,000	1,915,000	(0)
New Animal Products	1,175,000	115,000	-	133,000	16,500	1,439,500	1,380,000	163,600	1,543,600	(104,100)
Essential Oils and Plant Extracts	345,000	-	220,000	-	-	565,000	550,000	15,000	565,000	0
Rare Natural Animal Fibres	230,000	40,000	40,000	30,000	1,000	341,000	298,000	55,700	353,700	(12,700)
Wildflowers & Native Plants	350,000	-	165,000	-	-	515,000	496,000	19,000	515,000	0
Tea Tree Oil	230,000	-	200,000	-	2,950	432,950	404,950	28,000	432,950	0
Bioenergy, Bioproducts and Energy	500,000	-	657,000	-	57,000	1,214,000	971,000	299,000	1,270,000	(56,000)
Net Salary Contribution	513,946	-	-	-	-	513,946		513,946	513,946	0
	4,898,946	**155,000**	**1,622,000**	**163,000**	**97,450**	**6,936,396**	**5,904,950**	**1,204,246**	**7,109,196**	**(172,800)**
Established Industries										
Chicken Meat	-	1,765,000	35,000	1,090,000	230,000	3,120,000	3,200,000	286,000	3,486,000	(366,000)
Honeybee	50,000	300,000	-	300,000	18,000	668,000	550,000	92,000	642,000	26,000
Rice	140,000	215,000	-	21,000	70,000	446,000	990,000	102,000	1,092,000	(646,000)
Horses	450,000	-	550,000	-	35,000	1,035,000	1,000,000	137,000	1,137,000	(102,000)
Fodder crops	250,000	-	200,000	-	23,000	473,000	390,000	82,000	472,000	1,000
Pasture Seeds	-	150,000	-	150,000	29,000	329,000	350,000	45,000	395,000	(66,000)
Deer	0	25,000	-	80,000	10,500	115,500	200,000	30,500	230,500	(115,000)
Buffalo	0	-	-	-	-	0	-	0	0	0
Organics	310,000	-	80,000	-	-	390,000	340,000	50,000	390,000	0
Net Salary Contribution	322,367	-	-	-	-	322,367		322,367	322,367	0
	1,522,367	**2,455,000**	**865,000**	**1,641,000**	**415,500**	**6,898,867**	**7,020,000**	**1,146,867**	**8,166,867**	**(1,268,000)**
National Rural Issues										
Agroforestry & Farm Forestry	450,000	-	550,000	-	40,000	1,040,000	780,000	445,000	1,225,000	(185,000)
Environment & Farm Management	268,000	-	-	-	-	268,000	235,000	33,000	268,000	0
Rangeland & Wildlife Systems	185,000	-	-	-	-	185,000	170,000	15,000	185,000	(0)
Global Competitiveness	500,000	-	200,000	-	-	700,000	634,000	66,000	700,000	(0)
Food Integrity and Biosecurity	150,000	-	-	-	-	150,000	149,000	1,000	150,000	(0)
Rural People and Learning Systems	450,000	-	80,000	-	-	530,000	473,000	57,000	530,000	(0)
RIRDC Rural Leadership Program	550,000	-	100,000	-	-	650,000	635,000	15,000	650,000	(0)
Farm Health and Safety	120,000	-	400,000	-	-	520,000	435,000	85,000	520,000	(0)
Climate Change and Variability	400,000	-	200,000	-	-	600,000	600,000	0	600,000	0
Emerging Rural Issues	250,000	-	-	-	-	250,000	250,000	0	250,000	0
Net Salary Contribution	233,652	-	-	-		233,652		233,652	233,652	0
	3,556,652	**0**	**1,530,000**	**0**	**40,000**	**5,126,652**	**4,361,000**	**950,652**	**5,311,652**	**(185,000)**
Corporate										
Communications	498,300	-	-	-	-	498,300		498,300	498,300	0
Human Resource Management	197,500	-	-	-	-	197,500		197,500	197,500	0
Information & Communications Technology	301,900	-	-	-	-	301,900		301,900	301,900	0
Governance	1,458,300	-	-	-	-	1,458,300		1,458,300	1,458,300	(0)
Finance	1,312,235	-	-	-	-	1,312,235		1,312,235	1,312,235	0
Net Core Contributions	(316,200)	-	-	-	452,000	135,800		0	0	135,800
	3,452,035	**-**	**-**	**-**	**452,000**	**3,904,035**	**0**	**3,768,235**	**3,768,235**	**135,800**
All Programs	**13,430,000**	**2,610,000**	**4,017,000**	**1,804,000**	**1,004,950**	**22,865,950**	**17,285,950**	**7,070,000**	**24,355,950**	**(1,490,000)**

RIRDC Portfolios and Programs

The Rural Industries Research and Development Corporation

Our overall outcome is to facilitate a more profitable, dynamic and sustainable rural sector.

Our mission is to maximise the knowledge outcomes from our R&D investments for Australian industries and government in new rural industries, established rural industries and national rural issues.

PORTFOLIO 1: NEW RURAL INDUSTRIES

To provide the knowledge for diversification in Australia's rural industries

Programs:

- New Plant Products
- New Animal Products
- Essential Oils and Plant Extracts
- Rare Natural Animal Fibres
- Wildflowers and Native Plants
- Tea Tree Oil
- Bioenergy, Bioproducts and Energy (Includes Methane to Markets and Bioenergy Australia)

PORTFOLIO 2: ESTABLISHED RURAL INDUSTRIES

To provide the knowledge to increase the profitability, resilience and sustainability of RIRDC's established rural industries

Programs:

- Chicken Meat
- Honeybee
- Rice
- Horses
- Fodder Crops
- Pasture Seeds
- Deer
- Organic Systems

PORTFOLIO 3: NATIONAL RURAL ISSUES

To provide the knowledge to address national rural issues.

Programs:

- Agroforestry and Farm Forestry
- Environment and Farm Management
- Rangeland and Wildlife Systems
- Global Competitiveness
- Food Integrity and Biosecurity
- Rural People and Learning Systems
- RIRDC's Leadership Program
- Collaborative Partnership for
- Farming and Fishing Health and Safety
- Climate Change and Environment
- Emerging Rural Issues

Enabling Strategies

We will:

- ensure priorities are industry and government-driven
- ensure adoption by design
- ensure effective provider capacity
- build strategic partnerships

These corporate strategies will be underpinned by:

- excellence in research management
- excellence in corporate services
- good governance

Measures of Success

We will know we are successful when:

- there is a high level of adoption of knowledge generated by RIRDC's R&D investments
- evaluation of individual projects, programs and portfolios show a strongly positive return on investment
- RIRDC's R&D investments address the Government's National and Rural Research Priorities
- RIRDC's R&D investments address the priorities of industry partners
- RIRDC has substantial and significant collaborative partnerships with other research investment agencies that optimise the use of resources and opportunities
- RIRDC's governance framework, policies and practices comply with all statutory and government requirements
- our research management processes and our corporate service performance exceed benchmarks and stakeholder expectations
- quality research providers are available to address the range of RIRDC's R&D priorities

Portfolio One—New Rural Industries

General Manager

Dr Roslyn Prinsley
Ph: 02 6271 4129
Fax: 02 6271 4199
Email: roslyn.prinsley@rirdc.gov.au

Portfolio goal

To provide the knowledge for diversification in Australia's rural industries.

Portfolio strategies

To invest in R&D for new rural industries:

- that have significant market opportunities
- where Australian industry is likely to have a competitive advantage
- that are attractive to producers for expansion.

Portfolio success measures

We will know that we are successful when:

- sector five-year plans meet milestones and deliver on objectives
- knowledge is generated that meets the needs of rural industries
- there is a high level of support from industry and government stakeholders
- there is informed uptake of new technologies and industries.

Overview

Background

The New Rural Industries Portfolio invests in research and development for a suite of new and emerging industries including:

- Asian foods
- essential oils and plant extracts
- rare and natural animal fibres
- wildflowers and native plants
- tea tree oil
- buffalo
- bioenergy, bioproducts and energy

The Portfolio also invests in two large Programs:

- New Plant Products and
- New Animal Products

These programs include a variety of new and emerging industries, such as:

- olives
- tropical fruit
- coffee
- green tea
- cocoa
- kangaroo
- ratites
- crocodiles
- game birds
- farmed rabbit
- dairy goats and sheep, and camels.

Pressure on Australian agriculture to diversify

Pressure on Australian agriculture to diversify continues to increase. Declining terms of trade for commodities, increasing low-cost commodity competitors, and structural change driven by water reform and climate change risk are major contributors to this. New rural industries are a critically important part of Australian agriculture's response to these drivers.

Value to Australia's economy

Over 60% of farmers now have multiple enterprises, accounting for over 70% of the value of agricultural output. New rural industries produce substantial benefits to Australia. The value of 27 of Australia's emerging rural industries is estimated to be $673 million, contributing 2.2% of the gross value of farm production in Australia.

New industries' importance to agriculture and rural Australia

This portfolio helps develop new industries that provide farmers with new markets to meet changing consumer needs and fashions and increase growers' profitability and access to sustainable production alternatives.

The Program also researches and supports new industries that bring opportunity, diversity and resilience to rural and regional Australia.

Challenges and opportunities

New government initiatives

The new government has indicated a number of key rural industry and community priorities where RIRDC has an opportunity to contribute. Climate change is a particular focus. The government has also indicated priorities in reviewing the industry and regional development role of managed investment schemes; examining the sustainable development opportunities in northern Australia; and a reef rescue

fund that will use a number of tools, including R&D, to change farm practice and reduce impacts on the Great Barrier Reef. The New Rural Industries Portfolio is well positioned to play a major role in these initiatives.

Building human capacity for industry development and research—Research Centres of Excellence

Research capacity for rural industries has declined in Australia over the past five years and there are concerns that this is worsening. Through the Primary Industries Standing Committee (PISC) R&D Committee, state agencies are rationalising and concentrating their R&D interests, in some cases resulting in reduced co-investment with RIRDC. Universities are increasing their co-investment with RIRDC and seeking larger, longer term collaboration. We see an opportunity, through key research centres, to increase the overall investment in new industry research and development, leveraging funds to lock in and sustain R&D capacity for new industries.

Climate change and access to natural resources

Australia and the globe are experiencing rapid climate change, with increased temperatures, an increase in the frequency of heat waves and a decrease in the number of frosts and cold days. Rainfall patterns have also changed—the north-west has seen an increase in rainfall over the last 50 years, while much of eastern Australia and the far south-west have experienced a decline. Agricultural activities are vulnerable to projected regional reductions in rainfall in the south-west and possibly other parts of southern Australia. General warming will increase potential evaporation and water demand. Drought frequency and severity, and consequent stresses on agriculture, are likely to increase in many agricultural regions of Australia. RIRDC can respond through focused assessment of the new industry opportunities created by climate change as well as the development of bioenergy crop options to mitigate against climate change.

Key R&D issues for 2008–09

- understand consumer needs to inform new industry development and direction
- communicate and collaborate with industries to identify research priorities and to ensure their adoption
- improve quality of products and support development of sustainable and productive production systems
- assist new rural industries to ensure that products and systems meet safety standards
- support research and development to improve processing, storage and marketing
- foster the development of new products and industries
- strengthen development of new rural industries by supporting creativity, innovation and research capacity and capability
- assist regional development and rural wealth creation

Major deliverables for 2008–09

The key deliverables of the New Rural Industries Portfolio are:

- **enhanced R&D capacity for new rural industries**—initiate Centres of Excellence in Research and Development for the New Plant Products and New Animal Products Programs through a consortium approach of research agencies on a competitive basis
- **increased human capacity in new rural industries**—target capacity-building issues, including holding a new industries forum and leaders' summit
- **more rapid adoption of new industry innovations**—instigate a New Crops On Line Information Centre and assess the feasibility of initiating a New Animal Industries On Line Centre
- **diversification options in the prospective biofuels industry**—expand the program and develop a new five-year plan for the Bioenergy, Bioproducts and Energy Program
- **targeted, industry-driven R&D**—develop a new five-year plan for the Rare Natural Animal Fibres Program on the basis of strong industry partnership
- **innovation to meet new industry needs**—operate the New Animal Products, Tea Tree Oil, Essential Oils and Plant Extracts, Wildflowers and Native Plants Programs so that they continue to meet five-year plan goals and objectives
- **a strategic approach to new rural industries development**—review the strategy, structure and funding of the Portfolio with a focus on industry development.

New Plant Products

Research Manager

Mr Alan Davey
Ph: 02 6271 4126
Fax: 02 6271 4199
Email: alan.davey@rirdc.gov.au

Objective

To facilitate the development of new rural industries based on plants or plant products that have commercial potential for Australia.

Strategic plan

A five-year strategic plan for the program is being developed. This Program has separate R&D plans for native foods, culinary herbs, coffee and olives. Strategic plans for Asian foods, durian, rambutan, and mangosteen also exist. All these current plans will be revisited for their alignment within the developing New Plant Program Five-Year Strategic Plan and the RIRDC corporate strategies.

Sources of funds

This Program is funded by voluntary industry revenue and RIRDC core funds provided by the Australian Government. In 2007–08 13.5% of the R&D budget was sourced from the industry. In 2008–09 this is expected to increase, and preference will be given to project applications that are also supported by funds from industry sources.

Total R&D expenditure budget

$1 805 000

Background

The Program covers a vast range of crops and invests in both projects and activities that support products not previously grown commercially in Australia, and projects and activities that support the expansion of existing products into new markets. The investment is aimed towards crops and new plant industries that are too novel for support from other R&D corporations.

In 2008–09 the Asian Foods Program will be absorbed into the New Plant Products Program under a new 'Cultural and World Foods' category. This will mean the New Plant Products Program will have eight sub-programs in 2008–09 that will include:

- cultural and world foods (incorporating Asian foods and vegetables, foods of Mediterranean origin and other culturally linked, plant-based foods that are not already covered by an existing sub-program)
- native foods (indigenous to Australia)
- culinary herbs, spices and beverages
- olives
- extractive and fibre crops
- fruit, vegetables and nuts
- grains and pulses
- miscellaneous crops and activities.

Key long-term strategies

Invest in R&D for new rural industries:

- that have significant export or domestic market opportunities
- where Australian industry has a competitive advantage—for example in production, seasonality, or market access
- that will be attractive to producers to enter and expand the industry.

Key strategies for 2008–09

The research priorities are to:

- increase domestic and international demand for new plant products from Australia
- enhance the international recognition of the quality, safety, reliable supply and innovation of Australian produce
- facilitate profitable and sustainable supply chain systems
- facilitate effective production and marketing decisions
- strengthen the enabling environment, industry capacity, motivation and commitment.

Expected key outputs for 2008–09

- New Plant Products Five-Year Strategic Plan
- scoping and initiation of R&D centre for new plant industries
- development of a new crops website
- quality assurance manual for coffee growers
- field guide for pest and diseases in herbs
- at least five new minor use permits for the herb and spice industry
- preliminary results on olive oil shelf life and stability and consumer preferences
- status report for Asian foods industry in Australia
- development of an R&D plan for green tea

Australian olive oil production has expanded over the past 10 years in response to increasing demand

Expected key outcomes for 2008–09

- increased rambutan production through improved management practices resulting from previous R&D
- improved industry engagement through establishment of a green tea R&D panel
- improved industry direction through development of a pomegranate R&D plan with whole-of-industry support
- uptake of use of guidelines for producing lupini beans for export
- identification of native perennial grasses suitable for pastures
- improved productivity through

use of a guide to the olive industry on fruit-loosening agents

Key performance indicators

- sector five-year plans are meeting objectives
- knowledge is generated that meets the needs of rural industries
- there is a high level of support from industry and government stakeholders and continuing investment as measured through stakeholder surveys
- we can demonstrate, through an independent stakeholder survey, that RIRDC investment leads to uptake of new technologies and industries

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002297	Shelf life and olive oil stability	Rod Mailer	02 6938 1818
PRJ-002323	Drought tolerance of novel perennial legumes	Megan Ryan	08 6488 1776
PRJ-002333	Tropical exotic fruit industry—Strategic direction setting	Yan Diczbalis	07 4064 1128
PRJ-002336	Understanding the cropping behaviour of Riberry (Syzygium leuhmannii)	Garth Sanewski	07 5444 9650
PRJ-002399	Boosting rambutan productivity through improvements in fruit set.	James Drinnan	07 4048 4647
PRJ-002426*	Further development of the stevia natural sweetener industry	David Midmore	07 4930 9770
PRJ-002451	Opportunities for native fruit and nut production with low water use	David Midmore	07 4930 9770
PRJ-002391*	Changing decision making by LOTE growers	Slobodan Vujovic	03 9120 9297
PRJ-002580	Update and review of processed Asian foods in Australia	Barry Lee	0418 230 393

* still to be finalised

New Plant Products budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	1,873,203	1,903,766	1,815,760	1,773,492	1,705,724	1,555,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	220,650	241,389	202,394	535,925	247,555	340,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	*48*	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	*27,444*	*9,807*	*8,909*	*21,660*	*6,750*	*20,000*
All Other Income	-	-	-	-	-	-
Other Income	27,444	9,807	8,957	21,660	6,750	20,000
Total Income	**2,121,297**	**2,154,962**	**2,027,111**	**2,331,077**	**1,960,029**	**1,915,000**
R&D Expenditure						
RESEARCH	1,902,318	2,009,396	1,929,266	2,243,763	1,838,341	1,805,000
Advisory Committee Expenses	1,336	11,928	26,306	35,864	26,490	20,000
External Research Management	111,999	112,903	10,897	5,000	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	92,044	12,086	40,976	28,825	52,005	45,000
Meeting Expenses	-	-	-	-	*5,579*	*25,000*
Travel and Accommodation	*4,457*	*8,649*	*19,472*	*17,625*	*22,500*	*20,000*
Other Expenses	*9,143*	-	*194*	-	*15,114*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	13,600	8,649	19,666	17,625	43,193	45,000
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**2,121,297**	**2,154,962**	**2,027,111**	**2,331,077**	**1,960,029**	**1,915,000**

New Animal Products

Research Manager

Dr Peter McInnes
Ph: 08 8556 7331
Fax: 08 8556 7289
Email: mcinnes2@comstech.com

Objective

To accelerate the development of viable new animal industries.

Total R&D expenditure budget

$1 380 000

Strategic plan and internet accessibility

This Program has a three-year R&D plan 2006–2009, which is accessible in hard copy and at http://www.rirdc.gov.au. A Kangaroo Industry Plan 2005–2010 is accessible in hard copy from RIRDC and at http://www.rirdc.gov.au A Buffalo R&D Plan 2005–2010 is accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

This Program is funded largely from RIRDC core funds provided by the Australian Government. Preference will be given to project applications that are also supported by funds from industry sources. Kangaroo and buffalo R&D are funded from this program from statutory levies plus Australian Government contributions. Each of these R&D areas have separate sub-account budget statements.

Background

Over 40 animal species are the subject of new animal industry development. The estimated gross value of production (GVP) of selected industries at the farm gate was $280m in 2006–07 and has increased by 40% in the last five years.

In 2007–08 the Corporation funded over 50 projects covering 17 different new animal industries or enterprises. These projects, which include meat, skin and milk products, are along various segments of the value-added chain from production to marketing. For the very small potential industries R&D is initially directed to feasibility studies and/or the development of a business plan.

Funding includes research and development for commercialisation of native and feral animal products where enhancement of the environment and biodiversity are not threatened. Projects relating to native animals are in progress for kangaroo, emu, crocodile, turtles and snakes. Projects relating to exotic livestock continue in farmed rabbit, ostrich, camel, gamebirds, ducks, silk, sheep milk and goat milk. In 2008–09 the Buffalo Program, which previously was included as a separate Program in the Established Rural Industries Portfolio, will be part of the New Animal Industries Program.

Key long-term strategies

- fund production, processing, transport, storage and marketing R&D of animal products
- assist industry and enterprise development by the Corporation's participation at national industry meetings and facilitating integrated activities across various prospective animal industries
- disseminate outputs via industry newsletters, publication of final reports, media releases and electronic communication
- strengthen development within and across industries by supporting creativity, innovation, research capacity and capability, and international linkages
- maintain present market access, increase value of export markets, and identify new trading opportunities
- undertake feasibility research and/or business plans for some potential innovative animal industries
- increase co-funding of R&D from industry, enterprises and public sector interests

Key strategies for 2008–09

- commence assessment of the viability of specialty animal industries such as native ornamental fish and native freshwater turtle production by experimentation and documentation
- develop improved reproduction of some species by increased conception to artificial insemination, and improved breeding programs via quantitative genetics and genomics

New Animal Product projects include meat, milk and skin products like these crocodile accessories

- support greater national and international linkages for industry and research personnel
- continue to commission investments in R&D addressing the 2006–09 New Animal Products Plan
- encourage participation of postgraduates and post-doctorates in projects
- initiate and continue crocodile health and production research to reduce mortalities and poor growth in young farmed stock

Expected key outputs for 2008–09

- assess genotype/nutrition interactions in specialty duck meat production
- identify causes of ostrich chick mortalities
- determine feed to meat conversion ratios in farmed rabbits

- attain greater knowledge of the epidemiology of chlamydia in farmed crocodiles
- improve methods in artificial insemination in ostriches
- identify some diets to improve the health attributes of sheep milk products
- assess manufactured kangaroo meat products
- produce a new Kangaroo Industry Plan 2009–2014

Expected key outcomes for 2008–09

- increased opportunity for automation in farmed rabbit processing by using greater mechanisation and less human handling thereby reducing disease risks
- expanded knowledge of the genetic linkage mapping in crocodiles to allow greater accuracy in genetic selection programs
- increased management plans for commercial kangaroo marketing to expand the numbers that can be harvested in a sustainable way
- increased value chain integration for crocodile skins for the export market, particularly to Italy
- advances in the knowledge of the chemical composite of various kangaroo meats to be used for marketing advantages

Key performance indicators

- completion of most strategies in the Five-Year R&D Plan
- increase in the GVPof new animal industries
- R&D outputs being used in commercial enterprises
- identification and business assessment of the potential of new and specialty animal industries

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-000303	Kangaroo and the China Free Trade Agreement	John Kelly	03 6326 7696
PRJ-002364	Selective breeding programs for game bird and ratite farming	Irek Malecki	08 6488 7025
PRJ-002424	Commercialising native freshwater turtle production in south-east Queensland	Philip Chamberlain	07 3289 1887
PRJ-002461	Viral and endogenous retroviral detection and characterisation in crocodiles	Lorna Melville	08 8999 2251
PRJ-002551	Optimising genetics, reproduction and nutrition of dairy sheep and goats	Alexander Cameron	03 5286 1211
PRJ-002273	Re-invigorating NSW prawn farms through the culture of Mulloway	Alistair McIlogor	02 6648 3900
PRJ-002355	Alternative native ornamental fish	Brennan Chen	08 8303 7721
PRJ-002302	Taking the kangaroo industry to the internet community	John Kelly	03 6326 7696
PRJ-002352	Comparative carbon footprint for kangaroo products	Richard Begley	08 9449 9615

Dairy goats grazing single file

New Animal Products budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	1,168,714	1,208,352	1,263,440	1,229,000	1,289,849	1,175,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	40,637	70,519	89,350	85,000	112,062	115,000
External Contributions	-	-	-	-	-	-
Statutory Industry Levies	156,899	153,576	154,061	155,000	136,000	133,000
Interest	*11,688*	*17,869*	*23,922*	*17,000*	*20,001*	*16,500*
Industry Levy Penalties	*1,799*	*1,009*	*606*	-	*167*	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	*354*	-
Publications	*4,267*	*2,919*	*2,727*	-	*800*	-
All Other Income	-	-	-	-	-	-
Other Income	17,754	21,797	27,255	17,000	21,321	16,500
Total Income	**1,384,004**	**1,454,244**	**1,534,106**	**1,486,000**	**1,559,232**	**1,439,500**
R&D Expenditure						
RESEARCH	1,139,138	1,274,808	1,309,766	1,280,000	1,364,133	1,380,000
Advisory Committee Expenses	639	4,253	17,248	20,000	13,604	20,000
External Research Management	85,865	83,593	96,473	98,600	99,800	99,000
Employee Expenditure	-	2,275	-	-	-	-
Communications	12,559	12,735	11,050	17,500	22,426	15,000
Meeting Expenses	-	-	-	-	*500*	-
Travel and Accommodation	*371*	*777*	*310*	*4,000*	*3,000*	*6,000*
Other Expenses	*98*	*1,293*	*112*	-	*267*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	*18,763*	*23,257*	*22,164*	*22,000*	*22,824*	*20,000*
Other Expenses	19,232	25,327	22,586	26,000	26,591	26,000
Program Management Fees	1,800	4,500	4,800	4,800	4,800	3,600
Total R&D Expenditure	**1,259,233**	**1,407,491**	**1,461,923**	**1,446,900**	**1,531,354**	**1,543,600**
Operating Result	**124,771**	**46,753**	**72,183**	**39,100**	**27,877**	**(104,100)**
Retained surpluses at beginning of period	183,867	308,638	355,391	403,240	427,574	455,451
Retained surpluses at end of period	**308,638**	**355,391**	**427,574**	**442,340**	**455,451**	**351,351**

Note: This program is a consolidation of New Animal Products, Kangaroo and Ratite. Buffalo will also be included in this program from 2008-09. For comparative purposes all history of the buffalo program is shown in the actual and forecast columns above.

Essential Oils and Plant Extracts

Research Manager

Dr Roslyn Prinsley
Ph: 02 6271 4120
Fax: 02 6271 4199
Email: roslyn.prinsley@rirdc.gov.au

Objective

To provide the knowledge and skills base for industry to provide high, consistent and known qualities in their essential oils and plant extracts products that respond to market opportunities and enhance profitability.

Strategic plan and internet accessibility

This Program has its own five-year R&D plan, accessible in hard copy and at http://www.rirdc.gov.au. A new five-year plan is currently in production and will be available in hard copy and on the RIRDC website later in 2008.

Sources of funds

This Program is funded by voluntary industry revenue and RIRDC core funds provided by the Australian Government.

Total R&D expenditure budget

$550 000

Background

The Essential Oils and Plant Extracts Program represents a number of different industries, and a wide variety of end users. The common feature is that all involve growing plants to harvest active ingredients. Users include the pharmaceutical, industrial and food industries.

Essential oils are used for therapeutic properties, perfumery, food additives, and as industrial chemicals (solvents, etc). Dominant products in Australia are eucalyptus, sandalwood, lavender, peppermint and fennel. Australia exported $26.8 million of essential oils in 2003–04 and imported $22.7 million. The industry peak body is the Essential Oil Producers Association of Australia.

Medicinal herbs are produced for complementary medicines and for extraction of active compounds for pharmaceutical medicines. The global market for medicinal herbs has been growing steadily over the past decade. Sales of natural medicines in the United States are growing at between 3 to 4 per cent a year. The place of alternative medicines is also being recognised by the medical community. This has created good market opportunities, but also is increasing the demand for regulation of the industry.

There are three large herb growers in Australia, a small number of medium-sized growers, usually specialising in a particular herb, and an estimated 50–60 small-scale growers that are the main sources of medicinal herbs. The value of medicinal herb production is not known, but is estimated to be around $2 million a year. The processing of medicinal herbs in Australia draws largely on imported material. There is considerable scope for import replacement; however, both processing and growing costs are relatively high, which tends to restrict competition to the high-value, high-quality end of the market.

Rural Women's Award 2008 winner for Victoria, Lisa Mahon specialises in the production of value added dried herbs. She and her husband produce six dried herb crops and they are one of the largest producers of dried processed stinging nettle in Australia.

Key long-term strategies

- improve production systems to raise productivity and control over product qualities
- support the demonstration of safety and effectiveness of Australian products and facilitate the satisfaction of regulatory requirements to enhance market access
- support new ideas that provide potential for growing the market for Australian product
- improve industry and research capacity

Key strategies for 2008–09

- sandalwood silviculture and possible alternate long-term hosts will be investigated in cooperation with industry
- new DNA technologies will continue to be developed for the quality assurance of medicinal herbs
- commercial scale processes will continue to be developed involving the natural modification of existing plant components

leading to increased yields of flavour and aroma compounds from waste crop material
- Australian standards will be developed for oil of Australian lavandin cultivars
- the effectiveness of some Australian essential oils and their active constituents against main postharvest pathogens will be investigated
- identification of useful genetic variability within selected medicinal herbs and selection for yield and market desired characteristics under different production conditions
- best practice procedures for commercial production of essential oil crops will be made available through detailed high-quality crop manuals incorporating the latest information supported by readily accessible crop advisory systems
- newsletters will be supported

Expected key outputs for 2008–09

- a report of an assessment of the antimicrobial proprieties of native essential oils against the most common postharvest pathogens and provision of recommendations for those active constituents with most potential for development for postharvest protection
- four lavender industry/R&D newsletters will be produced
- best-practice procedures for commercial production of essential oil crops through detailed high-quality crop manuals
- refinement of a DNA fingerprinting microarray developed for Chinese, Ayurvedic, Western and Pan-American medicinal herbs important to the Australian herbal industry and a database of DNA fingerprints for economically important species and chemotypes of medicinal herbs

Expected key outcomes for 2008–09

- potential of tested essential oils to control postharvest diseases will be known
- information to lavender growers on production efficiencies with the benefit of a lesser impact on the environment and greater awareness of the lavender industry and an increased interest in its research opportunities
- introduction of better practice in production through provision of quality manuals
- availability of a prototype DNA fingerprinting microarray developed for Chinese, Ayurvedic, Western and Pan-American medicinal herbs important to the Australian herbal industry

Key performance indicators

- best management practice manuals distributed in print, and electronically
- uptake and adoption maximised by research results disseminated through industry communication avenues
- results of surveys of industry members on access to information
- widespread dissemination and use of information on production systems that provide for improvements in productivity of a target level for specified crops

New projects being funded or under consideration in 2008–09 include:

Project No	Title	Researcher	Phone
PRJ-002500*	Production of high quality plant extracts of Australian medicinal herbs	Mr Christopher Fitzgerald	03 58521082
PRJ-002676	Flood irrigated tropical timber trials in the north of Western Australia	Dr Liz Barbour	08 94758888

**still to be finalised*

Essential Oils and Plant Extracts budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	222,972	270,743	356,429	320,000	320,000	345,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	-	108,116	106,186	220,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	*150*	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	*875*	*234*	*380*	*1,000*	*300*	-
All Other Income	-	-	-	-	-	-
Other Income	875	234	530	1,000	300	-
Total Income	**223,847**	**270,977**	**356,959**	**429,116**	**426,486**	**565,000**
R&D Expenditure						
RESEARCH	199,876	243,420	326,690	409,116	413,486	550,000
Advisory Committee Expenses	1,272	5,328	21,865	6,000	5,000	5,000
External Research Management	15,715	8,958	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	4,719	8,160	5,950	6,500	6,000	5,000
Meeting Expenses	-	-	-	-	*1,000*	-
Travel and Accommodation	*1,292*	*5,111*	*2,454*	*7,500*	*1,000*	*5,000*
Other Expenses	*973*	-	-	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	2,265	5,111	2,454	7,500	2,000	5,000
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**223,847**	**270,977**	**356,959**	**429,116**	**426,486**	**565,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**-**
Retained surpluses at beginning of period	-	-	-		-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**-**

Rare Natural Animal Fibres

Research Manager

Dr Peter McInnes
Ph: 08 8556 7331
Fax: 08 8556 7289
Email: mcinnes2@comstech.com

Objective

To facilitate the development of new and established industries based on rare natural fibres.

Strategic plan

This Program has its own five-year R&D plan, accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

Part of the funding for this program comes from statutory levies on cashmere and mohair and a voluntary contribution from the Australian Alpaca Association. The remaining funds come from RIRDC's core funds provided by the Australian Government. For that part of the program, preference will be given to project applications that are also supported by funds from industry sources.

Total R&D expenditure budget

$298 000

Background

The program's main focus is on cashmere, mohair, and alpaca fibre. However, camel hair and other rare animal fibre projects could be included in the program.

The estimated GVP of alpaca, cashmere and mohair fibre in 2006–07 was $3.6m. Compared to the previous year in 2006–07, production remained stable for cashmere, up 32% for alpaca and down 5% for mohair.

Projects funded in 2007–08 cover many segments of the value chain for production (alpaca, mohair, cashmere) to marketing (mohair).

Genetically reducing fibre diameter and medullation, and increasing staple length, fleece weight and reproductive rate in angora goats results in both gains in production efficiency and product value. Source: Selecting High Performing Angoras*, RIRDC Pub. No. 05/141.*

Key long-term strategies

- addresses the goals, strategies and targets of the new R&D Plan 2009–2014
- identify constraints and solutions hindering increasing mohair, cashmere, and alpaca production
- develop additional product management systems
- develop improved processing technology and products

Key strategies for 2008–09

- increase productivity by improving animal breeding innovations (alpaca, cashmere producing goats), and more successful artificial insemination rates in alpaca
- develop further benchmarking to increase production performance, particularly for angora goats
- develop more textile technology innovations
- as appropriate, include postgraduates in projects to increase research capacity for the rare fibre industries
- continue to encourage international linkages and overseas visits for industry representatives and researchers

Expected key outputs for 2008–09

- production of the new R&D plan (2009–2014)
- provision of additional information on the inheritance of white fleece colour in alpaca
- further evaluation of cashmere producing goats, including across-herd evaluation
- production of a chapter for the mohair industry for inclusion in the manual '*Going into Goats*'
- additional information in production benchmarking of angora goats

Expected key outcomes for 2008–09

- increased interest from stakeholders following the publication of the 2009–2014 plan
- continued expansion of alpaca numbers and some larger production enterprises
- increased adoption of R&D outputs, including use of superior sires and improved scouring techniques
- increased international marketing of alpaca finished products
- increased assessment of the development of organic fibre and finished products

Key performance indicators

- increases in the GVP of rare natural animal fibres
- improved reproduction techniques in alpaca
- increased adoption and utilisation of R&D results
- increased textile technology R&D
- changes in the number of investors in the supply chain

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002498	ACGA Merrrit—Cashmere Estimated Breeding Value Program—phase 2	Andrew James	07 3214 2278
PRJ-002521	Improving production efficiency, quality and value-adding of rare natural fibres	Xungai Wang	03 5227 2894

Rare Natural Animal Fibres budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	215,710	234,723	273,199	227,500	227,500	230,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	10,688	14,370	16,915	15,000	16,900	40,000
External Contributions	20,000	20,000	40,000	40,000	40,000	40,000
Statutory Industry Levies	40,226	42,008	41,625	35,000	24,501	30,000
Interest	*402*	*832*	*2,563*	*1,000*	*4,500*	*1,000*
Industry Levy Penalties	*72*	-	-	-	*0*	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	*723*	*1,075*	*1,043*	*250*	*500*	-
All Other Income	-	-	-	-	-	-
Other Income	1,197	1,907	3,606	1,250	4,999	1,000
Total Income	**287,821**	**313,008**	**375,345**	**318,750**	**313,900**	**341,000**
R&D Expenditure						
RESEARCH	243,762	266,419	268,990	270,000	306,992	298,000
Advisory Committee Expenses	9,970	12,466	14,526	15,000	9,000	15,000
External Research Management	19,249	20,207	26,744	22,000	25,700	22,000
Employee Expenditure	-	-	-	-	-	-
Communications	2,016	2,308	2,449	5,000	5,000	5,000
Meeting Expenses	-	-	-	-	*8*	-
Travel and Accommodation	*799*	*3,719*	*1,154*	*5,500*	-	*5,000*
Other Expenses	*235*	-	-	-	*1,000*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	*819*	*1,518*	*4,125*	*3,000*	*2,929*	*7,200*
Other Expenses	1,853	5,237	5,279	8,500	3,937	12,200
Program Management Fees	1,500	1,500	1,500	1,500	1,500	1,500
Total R&D Expenditure	**278,350**	**308,137**	**319,488**	**322,000**	**352,129**	**353,700**
Operating Result	**9,471**	**4,871**	**55,857**	**(3,250)**	**(38,229)**	**(12,700)**
Retained surpluses at beginning of period	4,675	14,146	19,017	14,643	74,874	36,645
Retained surpluses at end of period	**14,146**	**19,017**	**74,874**	**11,393**	**36,645**	**23,945**

Wildflowers and Native Plants

Research Manager

Dr Roslyn Prinsley
Ph: 02 6271 4120
Fax: 02 6271 4199
Email: roslyn.prinsley@rirdc.gov.au

Objective

Our mission is to manage investment in research and development by the Australian wildflower and native plants industry and government to build:

- a profitable industry through more efficient production methods
- a strong reputation as a supplier of improved, new and innovative products
- expanded domestic and export market opportunities
- sustainable use of land and water resources

Strategic plan and internet accessibility

This Program has its own five-year plan, accessible in hard copy and at http://www.rirdc.gov.au. A new five-year plan is currently in production and will be available in hard copy and on the RIRDC website later in 2008.

Sources of funds

This Program is funded by voluntary industry revenue and RIRDC core funds provided by the Australian Government.

Total R&D expenditure budget

$496 000

Background

The wildflower industry is unique among Australian horticultural industries in its strong export focus. Wildflowers account for most of Australia's fresh flower exports and there is scope for further growth. The total value of the industry was estimated at $50m (wholesale) in 2005. The fragmented nature of the Australian flower industry means that reliable statistics are limited. Plantation sizes and grower numbers vary considerably, depending on the source. Australia wide it is estimated that there are some 500 growers. Wildflower and native plant products are primarily cultivated in plantations, with a few crops now grown more intensively in growing media in simple greenhouses.

The industry has great opportunity to further exploit current market demand and new product development, utilising our diverse range of native flora, to meet the needs of 'fashion driven' local and overseas buyers. This in turn could attract more investment and allow existing players to expand. Demand for wildflowers has recently expanded in the domestic market. Evidence for this includes a greater proportion of wildflower products in supermarket bunches, and more wildflowers included in the wholesalers' range.

On the world market, our industry's main competitive advantage lies in its ability to source new crops and products from our diverse and unique range of endemic flora. The majority of projects supported by RIRDC, State Departments of Agriculture and other research providers have focused on the development of new crops or products. A range of new technologies and management practices to improve quality and profitability have also been developed through R&D projects and give Australian growers a significant edge.

The Wildflower and Native Plants Program investigates the development of commercially relevant product specifications to improve quality and postharvest handling

Economies of scale are proving to be important to the profitability of some products and it is now becoming apparent that many large-scale growers are now seeking to expand. In some cases this expansion is through their subcontracting and mentoring new growers into the industry. In addition, small-scale growers are forming cooperative structures that enable them to operate and trade as a single supplier.

Wildflower growing can achieve better returns per unit area of land and per unit of water for irrigation, than many other agricultural enterprises. In addition, growing wildflowers generally requires fewer inputs of pesticides, fertiliser and water than growing traditional flowers such as roses, carnations and annuals.

Key long-term strategies

- provide profitable and sustainable production and management systems

- improve product quality through postharvest care and quality standards
- assess and evaluate markets to improve commercial outcomes for the industry
- improve existing products and develop new ones
- enhance the human capital of the industry and consequent research knowledge and adoption

Key strategies for 2008–09

- identify means of optimising irrigation scheduling techniques for key wildflower crops
- provide wildflower growers with a consistent scientific approach to balance soil chemistry on a wide range of soils
- examine product development/ commercialisation methodologies in order to identify ways in which it may be possible to increase the speed and decrease costs of new plant commercialisation
- examine a suite of undeveloped or underdeveloped native floriculture products that display significant commercial potential but have yet to be fully assessed and trialled under commercial production conditions
- select and test new ornamental eucalypt varieties for floriculture and landscaping, and release them commercially

Expected key outputs for 2008–09

- a series of fact sheets/brochures outlining commercial production methods and related information to inform potential growers of the plant requirements and manage their expectations of the return from each plant crop
- a review of the product development process with recommendations for streamlining the process in the future
- assessment of the financial viability of a range of grafted crops in a range of situations

Expected key outcomes for 2008–09

- improved capacity of wildflower growers to provide a high-quality, high-value product by engaging in a continuous improvement program, based on soil science
- potential wildflower industry entrants better informed on production methods and likely returns

Key performance indicators

- major portion of R&D focused on products with the greatest commercial potential
- output of production manuals for major and newly developed products
- development of commercially relevant product specifications to improve quality and postharvest handling
- positive feedback from industry obtained through stakeholder surveys

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002435*	Scent and consumer acceptability of cut Ptilotus flowers	Prof Daryl Joyce	07 5460 1725
PRJ-002501*	Assessing the commercial potential of six native floriculture products	Mr Shane Holborn	07 3824 9565
PRJ-002640*	Commercial release of ornamental eucalypt varieties	Dr Cassandra Collins	08 8303 6813
PRJ-002655*	Farm productivity and quality enhancement program	Mr Tim Bailey	02 4447 8016
PRJ-002659*	Increasing exports of Australian native foliages	Ms Lyn Shearer	07 5442 3055

**still to be finalised*

Wildflowers and Native Plants budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	271,722	247,096	227,102	212,000	212,000	350,000
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	23,714	24,194	20,000	30,000	20,030	165,000
RIRDC Salary Contribution	-	-	-	-	-	-
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	*11,275*	*437*	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	*1,661*	*781*	*539*	-	*100*	-
All Other Income	-	-	-	-	-	-
Other Income	1,661	12,056	976	-	100	-
Total Income	**297,097**	**283,346**	**248,078**	**242,000**	**232,130**	**515,000**
R&D Expenditure						
RESEARCH	258,309	264,097	231,366	216,000	214,481	496,000
Advisory Committee Expenses	-	300	10,077	15,000	9,000	10,000
External Research Management	29,107	18,113	900	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	8,672	763	1,626	6,000	7,000	5,000
Meeting Expenses	-	-	-	-	*150*	-
Travel and Accommodation	*877*	*73*	*4,084*	*5,000*	*1,500*	*4,000*
Other Expenses	*132*	-	*25*	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	1,009	73	4,109	5,000	1,649	4,000
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**297,097**	**283,346**	**248,078**	**242,000**	**232,130**	**515,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**-**
Retained surpluses at beginning of period	-	-	-		-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**-**

Tea Tree Oil

Research Manager

Dr Roslyn Prinsley
Ph: 02 6271 4120
Fax: 02 6271 4199
Email: roslyn.prinsley@rirdc.gov.au

Objective

To support the continued development of a profitable and environmentally sustainable Australian tea tree oil industry that has established international leadership in marketing, value adding, product reliability and production.

Strategic plan and internet accessibility

This Program has its own five-year R&D plan, accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

This Program is funded by voluntary industry revenue and RIRDC Core funds provided by the Australian Government.

Total R&D expenditure budget

$404 950

Background

The industry comprises about 100 growers and is located principally in northern New South Wales and on the Atherton Tableland in Queensland. About 3000 hectares of cultivated tea tree grows in these locations. In 2005–06, 522 tonnes of oil were sold, more than double the volume sold in 2001–02. In 2006–07, production was adversely affected by crop losses due to frost. About 500 tonnes were produced. GVP in 2006–07 was about $15 million. The crop for the current year has been adversely affected by flood losses, and it is expected that at least 50 tonnes will be lost. As a consequence, oil is now $34/kg farm gate and rising rapidly. Increasing demand and rising prices have encouraged increased planting using improved seed.

The market for tea tree oil in the cosmetic and personal health areas is maturing with the oil no longer being sought for its novelty value but continuing to be valued by consumers for its effectiveness. Oil is a component of a very wide range of personal health care, cosmetic and animal care products. The research supported by RIRDC on tea tree oil's therapeutic value provides critical credibility to it as a natural product. There are many opportunities for tea tree oil as a natural product ingredient to the mass market via multinational companies. A significant barrier to this development will be research information on safety, similar to that available for other chemical ingredients. About 90% of Australian tea tree oil is exported, principally to North America and Europe. Currently production in other countries is not significant, however this could change as the price increases.

Tea tree oil has long been identified as having medicinal properties

Key long-term strategies

- enhancing production systems to maintain the competitiveness of Australian growers
- identifying regulatory regimes and market barriers, and enhancing the ability of industry to meet safety standards
- demonstrating proof of concept/efficacy for innovative applications of tea tree oil
- fostering communication that increases understanding and thereby encourages greater use of tea tree oil

Key strategies for 2008–09

- breeding program to develop high-yielding, commercial varieties will continue
- research to provide proof of concept for use of tea tree oil formulations for the treatment of lice and flystrike in sheep
- continuation of successful preliminary research into the use of tea tree oil as an anti-cancer agent
- examination and characterisation of the ways in which tea tree oil may be interfering with the adhesion of microorganisms to different surfaces
- response to any issues that may be raised by the SCCP and consideration of a research plan with industry to respond to the new REACH regulations in the European Union

Expected key outputs for 2008–09

- improved seed developed by the breeding program
- correlation of variations in gene sequences with variations in oil profiles will be achieved to provide a diagnostic test of high value oils in Melaleuca
- a report on the effects of tea tree oil in controlling buffalo fly on cattle will be finalised
- a report demonstrating that tea tree oil products are a suitable alternative to existing products used to prevent staphylococcal infections associated with dialysis catheters will be finalised

Expected key outcomes for 2008–09

- release of improved seed and clones will maximise profit and market access for Australian tea tree oil producers given uptake by growers
- diagnostic test to provide direction for industry on best Melaleuca oils and how to produce them
- increased demand for tea tree oil through scientific evaluation of its qualities in animal and human applications
- better informed product development

Key performance indicators

- oil yield increases of up to 150%, compared with the industry standard, by 2010–11
- increased level of uptake of improved genetic material
- improved level of new information available in peer-reviewed journals on safety, efficacy and mode of action that originates from research funded by the program
- evidence of new product development activities
- increased commercial interest evinced in product development

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002334*	Tea tree oil for control of sheep ectoparasites	Dr Peter James	07 3362 9409
PRJ-002395*	Anticancer activity of *Melaleuca alternifolia* (tea tree) oil	Prof Thomas Riley	08 9346 3690
PRJ-002403*	Microbial adaptation and tolerance to tea tree oil	Dr Christine Carson	08 9346 3288
Commissioned project	Research plan and projects for responding to REACH regulations	TBA	

**still to be finalised*

Tea Tree Oil budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	194,390	254,000	212,676	230,349	221,673	230,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	74,942	180,003	143,891	190,000	224,138	200,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	*947*	*5,906*	*6,473*	*3,000*	*7,500*	*2,200*
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	*7,654*	-	-	-	-	-
Publications	*321*	*565*	*188*	*1,000*	*50*	*750*
All Other Income	-	-	-	-	-	-
Other Income	8,922	6,471	6,661	4,000	7,550	2,950
Total Income	**278,254**	**440,474**	**363,228**	**424,349**	**453,361**	**432,950**
R&D Expenditure						
RESEARCH	270,049	417,325	340,351	391,349	426,062	404,950
Advisory Committee Expenses	8,392	5,553	6,307	7,500	1,000	5,400
External Research Management	-	-	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	1,085	10,349	799	5,000	7,000	3,600
Meeting Expenses	-	-	-	-	*500*	-
Travel and Accommodation	*3,921*	*6,880*	*2,459*	*5,500*	*3,800*	*4,000*
Other Expenses	*3,807*	-	-	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	7,728	6,880	2,459	5,500	4,299	4,000
Program Management Fees	12,000	12,000	15,000	15,000	15,000	15,000
Total R&D Expenditure	**299,254**	**452,107**	**364,916**	**424,349**	**453,361**	**432,950**
Operating Result	**(21,000)**	**(11,633)**	**(1,688)**	**-**	**-**	**-**
Retained surpluses at beginning of period	34,320	13,320	1,688	3,799	-	-
Retained surpluses at end of period	**13,320**	**1,688**	**-**	**3,799**	**-**	**-**

Bioenergy, Bioproducts and Energy

Research Manager

Dr Roslyn Prinsley
Ph: 02 6271 4120
Fax: 02 6271 4199
Email: roslyn.prinsley@rirdc.gov.au

Objective

To meet Australia's research and development needs for the development of sustainable and profitable bioenergy and bioproducts industries and to develop an energy cross-sectoral R&D plan.

Strategic plan and internet accessibility

The Methane to Markets sub-program has its own five-year accessible from http://www.rirdc.gov.au.

Sources of funds

This Program comprises four major subprogram areas:

- a core R&D subprogram on Bioenergy, Bioproducts and Energy, which aims to meet Australia's research and development needs for the development of sustainable and profitable bioenergy and bioproducts industries. It is funded by the RIRDC core funds provided by the Australian Government and some voluntary industry revenue
- Bioenergy Australia, an alliance of about 65 government, research and industry organisations. Its goal is to foster the development and use of biomass for sustainable production of energy, transportation fuels, chemicals and other value-added products. It functions as a research networking and coordination arm of the program and is funded by the contributions of its members
- Methane to Markets is an externally funded collaborative program, with the Department of Agriculture, Fisheries and Forestry, Dairy Australia, Australian Pork Limited, Meat and Livestock Australia and the Australian Lot Feeders' Association. Its goal is to encourage and enable development, adaptation and use of methane capture and use technology in the Australian intensive livestock industries
- a collaborative R&D corporation program on Energy in Agriculture with funding from RIRDC, Australian Pork Limited, Meat and Livestock Australia, Cotton Research and Development Corporation, Sugar Research and Development Corporation, the Australian Chicken Meat Federation and possibly the Grains Research and Development Corporation. It aims, in the first instance, to:
  - develop an agreed methodology to undertake life cycle assessments for energy, greenhouse emissions and water use
  - assess the energy efficiency of Australian agricultural systems.

Total R&D expenditure budget

$971 000

Background

Demand for alternative feedstocks for fuels, electricity, chemicals and a range of commercial products has grown dramatically throughout the world in the early years of the 21st century. This demand is driven by the high price of petroleum, domestic government policy to promote alternatives to fossil fuels and reduced dependence on foreign oil, as well as growing efforts to reduce net emissions of carbon dioxide and other greenhouse gases. The health benefits of biofuels as well as the benefits to regional development are also often drivers.

A move to full scale biofuel production in Australia offers many opportunities to Australian agriculture, but also some risks. Biofuels in Australia—issues and prospects *(RIRDC Pub. No. 07/071) discusses these issues.*

Australia faces a complex set of challenges and opportunities with respect to future energy supplies, policy and technology. An unprecedented interest in bioenergy in the international arena—as well as Federal and State governments who are keen to promote new industries, and investors and engineers keen to promote new biofuel and bioenergy technologies—means that bioenergy is becoming a tangible option for the future. A move to bioenergy will have major implications for farms and regions. High fuel prices are already having an impact on agriculture, as the input costs increase for many businesses reliant on long-distance transport. The outlook for petrol and diesel is one of a declining resource base coupled with increasing demand. The increased reliance on imported sources of energy also

threatens Australia's economy, future competitiveness and national security. The challenge is to become more energy efficient and self-sufficient at farm and regional scales. The development and implementation of the proposed research agenda can advance the Australian Government's policies for climate change. Innovation in the agriculture sector can make a significant contribution to reductions in greenhouse gas emissions. The implementation of greenhouse gas abatement programs can also provide secondary income streams for farmers.

Reducing methane emissions is one of the most cost-effective ways to realise immediate environmental benefits due to methane's potency as a greenhouse gas and short atmospheric lifetime. The potential for capture and use of methane from livestock is greatest in the intensive livestock industries, where manure management is estimated to contribute three per cent of emissions from Australian agriculture.

Cost-effective alternative fuel technologies and feedstocks are required that both maximise reduction of CO2 emissions and increase energy costs, efficiency and security. There is some potential for expanding the agricultural footprint to include annual or perennial energy crops, but the productivity and environmental impacts of new crops in new areas are largely unknown. There are likely to be both positive and negative environmental impacts of expanding current crop production or cultivating new energy crops. Biodiversity, salinity, water resources and soil fertility could all be affected. A capacity to demonstrate sustainable production of feedstocks will be important to obtaining access to some potential overseas markets (such as the European Union), which may represent a significant opportunity for Australia.

There are several initiatives in Australia and overseas to move towards a 'bio-based economy' that provides opportunities to diversify in the biomass production and manufacturing sectors. Utilisation of current biomass material, as well as that which could become available as a result of new plantings or production systems, has the potential to reduce Australia's fossil fuel requirements and provide raw materials for a wide range of high value products.

Key long-term strategies

These are currently under review for development of the program's five-year plan, as follows:

- develop sustainability guidelines for the Australian bioenergy and bioproducts industries
- assess and adapt existing Australian and international feedstocks and develop new feedstocks for bioenergy and bioproducts
- scope, compare and develop energy and cost-efficient technologies, infrastructure and logistics for harvesting and processing biomass
- evaluate conversion technologies and select, research and develop those that are competitive for Australian circumstances
- develop bioproducts that complement bioenergy production systems
- identify sustainable transition pathways for bioenergy in the context of a range of alternative energy futures, given different climate change, economic and policy scenarios
- develop and implement an outreach program using existing and new networks to deliver the capacity of Australia's rural industries to utilise the results of this program

Methane to Markets

- development and adaptation of methane capture and use technology for application in the Australian intensive livestock industries
- reduction of the uncertainty, risk and cost of installing methane capture and use systems
- effective communication of the project outcomes
- facilitation of commercialisation of on-farm systems for methane capture and use technology

Key strategies for 2008–09

- review national and international developments in the approaches to sustainability
- scope and compare new crop options for sustainable feedstock production
- develop a research investment framework to identify the most likely technologies to deliver a competitive advantage to Australian industries, and maximise their benefits across economic and environmental value chains
- evaluate the role of bioenergy systems in mitigating carbon and in carbon trading
- identify appropriate combinations of biomass feedstocks, renewable energy products and conversion processes that maximise major elements of the potential triple bottom line benefits to the Australian economy
- maximise the research networking and coordination role of Bioenergy Australia

Methane to Markets

- undertake projects to monitor the performance of existing covered lagoons and apply that data to validate models for predicting the output from similar sites in Australia
- establish demonstration sites of highly loaded covered lagoons on a typical sized dairy and piggery to establish their suitability in Australian conditions
- publish the results of completed projects
- continue Australia's constructive participation in the International Methane to Markets Partnerships Program

Expected key outputs for 2008–09

- a national Bioenergy Australia conference on bioenergy and bioproducts
- presentations on potential new feedstocks at a special session of Bioenergy Australia Conference 2008
- a workshop that identifies Australian native species for the production of suitable biomass as feedstock for the biofuels industry

- recommendations on the rollout of commercial and near-commercial crops and technologies and the R&D requirements for emerging (second generation) biofuel options that will maximise the contribution of sustainable bioenergy industries
- a resource providing data on yield, cost and emissions associated with all major matched biomass sources, energy densification and conversion technologies
- an updated appraisal on rapidly emerging bioenergy technologies and energy crops
- a manual and fact sheets for growers and regions to develop a sustainable renewable energy industry based on multiple harvests of mallee plantations
- identification and analysis of potential native species for biodiesel production that grow well on degraded and grazing lands of central Queensland
- *Brassica juncea* germplasm better adapted to the northern grains region, with higher oil content, high concentrations of glucosinolate and erucic acid that will produce high-quality biodiesel

Methane to Markets

- a detailed analysis of the monitored performance of existing covered anaerobic lagoons at piggeries in Victoria and Western Australia versus that predicted by computer models
- a report on the demonstration of new highly loaded covered anaerobic lagoons at a dairy in Victoria and a piggery in Queensland

Expected key outcomes for 2008–09

- improved capacity for investment decisions by research agencies, biofuel industry and other investors (e.g. banks) in new and novel biofuel and bioenergy feedstocks guided by rational and objective analysis of the options
- informed industry and government decision makers on the potential opportunities associated with a range of renewable energy options
- identification of appropriate strategic alliances between biomass industries, technology providers and end users that will accelerate the development of a renewable energy industry in Australia
- demonstration of feasibility of a production system for microalgal oil feedstock for the biodiesel industry using saline water
- informed producers and regional bodies concerning establishment of an effective biodiesel industry based on mustard in the northern grains region
- demonstration of the technical and financial viability of methane capture and use in the Australian intensive livestock industry

Key performance indicators

To be developed with the five-year plan for this program.

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-003196*	Identifying and developing Australian native species as biofuels crops	Prof Robert Henry	02 6620 3010
TBC*	Algal productivity and environmental performance project	TBC	
PRJ-002369*	Determining sustainability of biomass harvesting in planted forests	Dr Annette Cowie	02 9872 0168
PRJ-002408	Evaluating biodiesel potential of Australian native plants	A/Prof Nanjappa Ashwath	07 4930 9595
PRJ-002459*	National agroforestry pilot to assess and develop regional bioenergy potential	Mr Peter Ampt	02 9385 5677
PRJ-002522	Best fit biofuel production technologies for agro-industrial enterprises	Dr Phil Hobson	07 3138 1240
PRJ-002568*	Chemical products from lignin	Dr Geoff Dumsday	03 9545 2344
PRJ-002601	Sustainability framework for biobased products in Australia	Dr Deborah O'Connell	02 6242 1573
PRJ-002648*	Model regional protocols for renewable bioenergy based on Mallee plantations	Mr Peter Milthorpe	02 6895 2912
PRJ-002696	Demonstration of market delivery of biodiesel from Indian mustard in NW NSW	Prof Richard Trethowan	02 9351 8860
PRJ-002699*	Scoping future biomass production feedstocks	Dr Deborah O'Connell	02 6242 1573

**still to be finalised*

Bioenergy, Bioproducts and Energy budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	25,000	-	25,000	345,000	277,377	500,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	172,713	183,397	248,412	1,213,000	940,211	657,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	*9,599*	*11,415*	*-*	*10,000*	*35,986*	*7,000*
Industry Levy Penalties	*-*	*-*	*-*	*-*	*-*	*-*
Royalties	*-*	*-*	*-*	*-*	*-*	*-*
Project Refunds	*45,000*	*75,000*	*72,000*	*40,000*	*-*	*50,000*
Publications	*-*	*-*	*-*	*-*	*1,501*	*-*
All Other Income	*-*	*-*	*-*	*-*	*-*	*-*
Other Income	54,599	86,415	72,000	50,000	37,487	57,000
Total Income	**252,312**	**269,812**	**345,412**	**1,608,000**	**1,255,075**	**1,214,000**
R&D Expenditure						
RESEARCH	224,699	240,826	112,258	1,340,000	805,367	971,000
Advisory Committee Expenses	-	-	-	20,000	7,000	27,000
External Research Management	-	-	139,699	202,000	202,000	171,000
Employee Expenditure	-	-	-	-	-	-
Communications	762	-	2,500	10,000	24,420	35,000
Meeting Expenses	*-*	*-*	*-*	*-*	*3,500*	*11,000*
Travel and Accommodation	*319*	*-*	*364*	*10,000*	*28,000*	*5,000*
Other Expenses	*-*	*-*	*1,479*	*-*	*337*	*-*
Consulting Fees	*-*	*-*	*-*	*-*	*-*	*-*
Temporary Staff	*-*	*-*	*-*	*-*	*-*	*-*
Couriers	*-*	*-*	*-*	*-*	*11*	*-*
Levy Collection Costs	*-*	*-*	*-*	*-*	*-*	*-*
Other Expenses	319	-	1,843	10,000	31,849	16,000
Program Management Fees	-	-	-	50,000	40,000	50,000
Total R&D Expenditure	**225,780**	**240,826**	**256,300**	**1,632,000**	**1,110,635**	**1,270,000**
Operating Result	**26,532**	**28,986**	**89,112**	**(24,000)**	**144,440**	**(56,000)**
Retained surpluses at beginning of period	169,615	196,147	225,133	231,716	314,245	458,685
Retained surpluses at end of period	**196,147**	**225,133**	**314,245**	**207,716**	**458,685**	**402,685**

Portfolio Two—Established Rural Industries

General Manager

Ms Margie Thomson
Ph: 02 6271 4130
Fax: 02 6271 4199
Email: margie.thomson@rirdc.gov.au

Portfolio goal

To provide knowledge to increase the profitability, resilience and sustainability of RIRDC's established rural industries.

Portfolio strategies

Invest in R&D for RIRDC's established rural industries:

- in areas identified by government and industry as high priority
- that promote development and uptake of innovative technologies and solutions.

Portfolio success measures

We will know we are successful when:

- sector five-year R&D plans meet objectives
- we generate knowledge that meets the needs of established rural industries
- there is a high level of support from industry and government stakeholders for continuing investment
- we can demonstrate that RIRDC investment leads to uptake of new technologies and solutions.

Overview

Background

The Established Rural Industries Portfolio invests in research and development for a suite of agricultural industries, including intensive and extensive livestock industries and irrigated and extensive broadacre industries. Industries represented in the Portfolio to 2007–08 have included:

- rice
- chicken meat
- horse
- pasture seeds
- fodder crops
- honeybee
- deer
- buffalo

The Organics R&D Program will join the Portfolio in 2008–09 and the Buffalo R&D Program will be moved to the New Rural Industries Portfolio.

Research programs are managed by RIRDC on behalf of these industries and are funded through one or more of the following sources:

- statutory producer levies that are matched by government (some limited by a three-year rolling formula as defined in the *PIERD Act 1989*
- voluntary contributions provided by external statutory or commercial bodies
- government appropriations provided directly to RIRDC.

The portfolio continues to feel the impact of the drought on agricultural production, which has led to reduced levy revenue available to fund R&D. The portfolio's focus will continue to be on support for key industry priorities and maintenance of research programs despite low levels of program income.

In 2008–09 the Portfolio will invest in a wide range of research, including:

- development of technologies to define and control endemic and emerging infectious and non-infectious diseases and develop strategies and methods for rapid recognition and control of emergency animal diseases
- development of controls and treatments for pests and diseases of honeybees, including varroa mite and small hive beetle
- further progress towards the development of cold-tolerant rice varieties
- support for innovative fodder crop breeding and germplasm evaluation for industry
- development of improved harvesting and thrashing methods for medic and biserrula pods to reduce environmental and practical considerations
- adoption of the results of research arising from the Market Focused Venison Alliances initiative
- addressing strategies and key performance indicators in the Organic Industry R&D Plan 2006–2011 in priority sectors of grains, dairy, horticulture and meat.

Challenges and opportunities

To remain profitable and sustainable, while improving the condition of Australia's natural resources, remains a key challenge for established rural industries.

The high level of competitiveness in international markets also means that issues such as biosecurity, targeting of products to enhance market access, assessment of product integrity, and animal and crop health issues need to remain a central focus. For example:

- RIRDC continues funding development of higher yielding plant varieties that are linked to protecting farmers' terms of trade and have the potential to increase consumer demand
- portfolio programs will continue to identify improvements to farming and processing to reduce costs and improve outputs
- established rural industries are dependent on early management of pests and diseases. RIRDC is working to find ways to improve pest and disease management
- water access will also increasingly become an issue for researchers to consider as water trading puts pressure on rural industries to work smarter with an increasingly expensive and scarce resource. RIRDC will continue to support projects that assist in our understanding of water balances and water efficiency in pasture and crop production
- food safety has been a key focus of the Established Rural Industries Portfolio for many years and maintenance of high standards of product hygiene, quality and safety are paramount to the further development of established rural industries. Collaboration with allied organisations that can identify gaps in our current knowledge in regard to technical and production cost efficiency will be a primary element of the Established Rural Industries Portfolio.

Key R&D issues for 2008–09

Seasonal conditions

The drought continues to have a devastating impact on many of the established industries in RIRDC. The pasture seeds and fodder crops industries have experienced several years of drought and the rice industry is struggling through its fifth year of poor seasonal conditions in six years. The rice crop, to be harvested in March and April 2008, is expected to be as little as 15kt (1% of the industry's normal production) and deer production has slowed due to the large livestock turnoff experienced during the first stages of the current drought. There has been an escalation in livestock input costs reducing returns to the chicken meat and deer industries. Surprisingly, honey production has not been dramatically affected despite international honey prices declining 33 per cent over the last twelve months and pollen sources reported to be patchy in some key producing areas of Australia. Portfolio revenue is lower than previously forecast due to the impact of the drought as statutory levies are mainly production based (for example rice is levied on a per kilogram basis).

Application of the RIRDC reserves policy

The RIRDC reserves policy is used to determine the level of portfolio R&D expenditure and financial reserves to be held, using future government and industry production and price forecasts as a guide. This policy allows RIRDC to maximise sustainable investment in research and development consistent with its business objectives, while retaining sufficient funds to meet contracted liabilities and to maintain research and development capacity.

The policy states that financial reserves in each of the industry programs should be maintained at a level that, when combined with prudent expenditure, enables industry programs to maintain R&D investment despite normally encountered revenue volatility.

New Initiatives

RIRDC has been working with the Australian Government Department of Agriculture, Fisheries and Forestry on an initiative to develop an industry-based alliance between the pollination and horticultural industries to increase their preparedness for potential impacts of the insect pest *Varroa destructor*. This initiative will provide the basis for future investment in biosecurity for this alliance group.

The Horse R&D Program has undertaken a wide range of project commissioning to address new and developing research areas. This, in conjunction with allocation of scholarships to support the development of postgraduate research, will support ongoing development of research in horse industries.

The Chicken Meat Program will be further expanded in 2008–09 to address opportunities for productivity growth through R&D in the industry. This continues the process of program expansion commenced with Board approval in 2007–08. The program has appointed a Program Development and Communications Coordinator on a two-year contract to work with the Advisory Committee, the Research Manager and industry participants to develop an expanded R&D program consistent with the RIRDC Chicken Meat R&D Plan 2003–08. The Program includes an investment of $300 000 in 2008–09 to support the Poultry Cooperative Research Centre. The industry is expected to apply for a second term, following the PCRC review announced by Minister Carr in January 2008.

Major deliverables for 2008–09

Sustained R&D against five-year plans for drought-affected sectors through prudent investment consistent with RIRDC's Reserves Policy

Use of financial reserves and prudent investment will form the basis for activity in all R&D programs within the Established Rural Industries Portfolio in 2008–09, particularly where the industry sectors have been heavily affected by drought conditions. Financial reserves, held in the industry sub-accounts, will be maintained at a level that ensures a sustainable level of portfolio R&D investment is achieved over the next five years. For example, further draw down of financial reserves will be required in a number of programs to allow the key components of the five-year plans to be implemented in 2007–11.

Development and implementation of the Pollination Australia Program with Horticulture Australia Ltd (HAL) and other research and development corporations

RIRDC, together with the Australian Government Department of Agriculture, Fisheries and Forestry, held an Industries Linkages Workshop in April 2007 that led to significant political, industry and media interest in the potential impact of the insect *Varroa destructor* on the honeybee and plant-based industries if it arrives in Australia. CSIRO estimates pollination services that would be affected by varroa to be valued at $1.7 billion.

A $300 000 grant was provided to RIRDC in June 2007 by the Australian Government Department of Agriculture, Fisheries and Forestry's Advancing Agriculture Industries Program to develop an industry-based alliance between the pollination and horticultural industries to increase its preparedness for varroa. A business plan is currently being prepared, using these funds, that will allow the proposed industry-based alliance to develop a risk management, R&D and education and training strategy. Pledges for funding are currently being sought from a number of HAL based industries and the honeybee industry to implement the business plan in 2008–09.

New five-year R&D plans for Fodder Crops and Chicken Meat Programs

A new five-year plan for the Pasture Seeds R&D Program has been developed and will be implemented from 2008–09. New five-year R&D plans for the Fodder Crops and Chicken Meat Programs will be developed in 2008 for implementation in 2008–13.

Sustainable resourcing of R&D programs (especially Fodder Crops and Rice Programs)

The Established Rural Industries Portfolio uses the RIRDC financial reserves policy to maximise its investment into research and development, consistent with its business objectives, while ensuring sufficient income is available to cover contracted liabilities and to maintain research and development capacity. Expenditure in the Chicken Meat R&D Program will be increased in 2008–09 to $3.2 million ($2.8 million in 2007–08) and expenditure in the Horse R&D Program will be expanded in 2008–09 to $1.0 million ($1.1 million in 2007–08). These industries can capture the benefits of increased innovation through research and development and the financial status of the programs enable expansion. Both programs have sufficient reserves and opportunities to address key objectives of their five-year R&D plans.

Most portfolio programs will continue to draw down on their financial reserves using the RIRDC reserves policy as a guide.

Chicken Meat

Research Manager

Dr Vivien Kite
Ph: 02 9929 4077
Fax: 02 9925 0627
Email: vivien.kite@chicken.org.au

Objective

Support increased sustainability and profitability in the chicken meat industry through focused research and development

Strategic plan and internet accessibility

This Program has its own five-year R&D plan, which is accessible in hard copy and on the internet at http://www.rirdc.gov.au

Sources of funds

The program is funded by statutory levies paid by industry participants. This levy revenue is matched by RIRDC at up to 0.5 per cent of GVP. No new source of joint funding has been identified.

Total R&D expenditure budget

$3 200 000

Background

ABARE estimates the current GVP of the chicken meat industry to be $1.414 billion. The GVP of the industry has grown by over 50% in the past decade.

Production is dominated by a small number of quite large, vertically integrated, privately owned enterprises. These companies typically own hatcheries, feed mills, breeding farms and processing plants, in some cases across a number of states, and contract out the growing of their broiler chickens to independent contract chicken growers, of which there are approximately 800 nationally. Each of the major companies operating in the industry invests significant funds into in-house R&D, particularly in the areas of market research and product development, processing technologies, quality control procedures, distribution and packaging.

In 2007, industry produced 816 616 tonnes of chicken meat from slaughterings of 460 million birds. Production has increased steadily over the past decade, with growth rates ranging between 0–7% pa (averaging 4.5% pa). In 2006–07, the number of birds produced increased by approximately 3% over the previous year. In recent years, the growth rates for meat produced are higher than those for number of birds produced, as the average bird weight at slaughter has increased over the past decade. NSW produces the largest share of chickens marketed in Australia (34%), followed by Victoria (28%), Queensland (19%), South Australia (9%), Western Australia (9%) and Tasmania (1%).

The real price of chicken has declined over the past 50 years. However, the current global grain supply situation, which has resulted in unprecedented feed grain prices, has led to increases in chicken prices over the first half of 2007–08, with further increases possible.

Average annual domestic consumption of chicken meat is currently approximately 37.4 kg/person. Per capita consumption is expected to continue growing at current rates (up to 1% per year). The growth in popularity of chicken over past decades has undoubtedly been in large part due to its increasing affordability vis a vis other meats and protein sources. The increasing price competitiveness of the product has been to a large extent made possible by efficiencies across all areas of production.

Significant productivity improvements over time have been a feature of the industry. As an example, 40 years ago it took 65 days and 5.7 kg of feed to grow a meat chicken out to 2 kg and by 2005 this liveweight was achievable in only 36 days and using only 3.6 kg of feed. The average time taken to reach a liveweight of 2.55 kg today is 44 days. To reach this liveweight, chickens will convert feed into liveweight with an efficiency of 1.8 kg of feed per kg liveweight.

The industry is relatively mature and has a history of rapid adoption of new technology. Genetic stocks, processing and housing technology tend to be imported. In the case of genetic stocks, the genetic potential of stocks for growth and superior performance is constantly improving. Feeding, health management and bird husbandry programs often require significant adaptation to suit Australian conditions and feed ingredients. There has been significant investment in recent years into new housing systems.

The RIRDC Chicken Meat R&D Program is also a major partner in the Australian Poultry CRC, which ensures a comprehensive and well-coordinated research program for the Australian chicken meat industry.

Opportunities for continued productivity enhancements, through the adoption of improved technology on-farm (in areas such as bird health, husbandry, nutrition, feed management) and elsewhere remain, and are key components of the RIRDC program.

The RIRDC Chicken Meat R&D Program is also a major partner in the Australian Poultry CRC, which ensures a comprehensive and well-coordinated research program for the Australian chicken meat industry. The RIRDC program has been adapted to collaborate with and complement the CRC program.

Australia is a very small producer of chicken in the global context and the Australian industry has largely a domestic market focus, with less than 3.5% of domestic production currently being exported. There is virtually no importation of chicken meat into Australia, other than very small quantities of fully retorted or cooked-in-can products. Current quarantine restrictions effectively prevent significant importation. However, an import risk assessment process for chicken meat is nearing completion and may open up some opportunities for importation of chicken products from some regions in the future. Chicken is a commodity on global markets, and while the Australian industry is recognised to be one of the most technically efficient producers of chicken meat in the world, it is a relatively high-cost producer. The cost disadvantages of producing chicken meat in Australia run right through the production chain. The Australian industry is therefore at some risk of competition from imported product, should protocols be established that allow importation. Furthermore, restrictions on access to critical inputs, particularly feed grains, have the potential to limit growth, or to impact on the price of chicken to the extent that demand is affected. In this environment, and in order to remain competitive and to expand its markets, the industry recognises the need for it to continue to make significant gains in areas of technical and cost efficiency, and this will remain a major focus for the R&D program.

Australia is considered to have a relatively good bird health status compared to most countries, and is one of the few continents untouched to date by the impacts of the H5N1 strain of avian influenza. This has provided some opportunities for the export of breeding stock, in particular. However, there are risks to the Australian industry posed by the global spread of H5N1 avian influenza. An outbreak of avian influenza in Australian poultry flocks (even if in a sector other than chicken meat) would have a dramatic and immediate impact on domestic consumption, which would in turn impact on production and on industry's short and medium term growth. Requirements for R&D in this context will therefore continue to be monitored.

Increasing demands are likely to be placed on participants within the industry to reduce their impacts on resources, particularly water and fossil fuel, and their greenhouse gas emissions. There is now some urgency to address this issue, firstly in terms of quantifying the chicken industry's contribution to these, and then by identifying critical points in production and strategies that can be used to reduce these impacts. This will be a major priority of the R&D program over the coming year.

Key long-term strategies

- develop the necessary technologies to define and control endemic and emerging infectious and non-infectious diseases and develop strategies and methods for rapid recognition and control of emergency animal diseases
- develop nutritional strategies to improve nutrient utilisation through the optimisation of gut health and manipulation of nutrient constituents
- develop and disseminate enhanced on-farm and processing plant food safety programs and develop through-chain strategies for control of Campylobacter and other food safety pathogens
- improve public awareness of safe handling of chicken meat products
- identify objective measures of bird welfare, evaluate welfare issues and address identified problem areas by the development of strategies that enhance bird welfare
- assist industry to develop and implement a national 'whole of industry' biosecurity program
- undertake regular assessment of consumer perceptions of industry practices and products
- quantify resource use across the industry and identify opportunities for more efficient resource and waste product management
- establish and facilitate adoption of performance-based environmental criteria based on acceptable farming practices
- identify and quantify the environmental impacts of the industry and investigate and develop practical technologies and management practices to minimise the impact of environmental emissions
- investigate the impact of the regulatory operating environment on industry competitiveness
- provide a 'clearing house' function for international research in relevant fields
- identify and support relevant technology transfer, training and networking opportunities for both industry personnel and the R&D community supporting the industry

Key strategies for 2008–09

- undertake research to fill the knowledge and data gaps identified by known/potential users of chicken litter as fertiliser, which present an impediment to them using the product to a greater extent
- quantify resource use in chicken meat production and identify opportunities for more efficient resource management
- undertake an analysis to establish the environmental emissions associated with chicken meat production and how these can be reduced
- investigate the cause of oesophageal lesions in breeder chickens
- assist industry to develop and adopt improved disease prevention, management and diagnostic techniques
- assist industry to improve adoption of bird welfare and

biosecurity quality assurance and audit programs
- evaluate the nutritional value of several key existing and new feed grain varieties for their potential value in chicken meat production
- develop and evaluate techniques for the rapid (real time) assessment of the nutritional value of feed ingredients and for enhancing feed ingredient utilisation in meat chicken diets
- complete a life cycle analysis of Australian chicken meat, using a common methodology that is applicable to a range of Australian agricultural industries
- assist industry to monitor, evaluate and improve its implementation and management of intervention strategies aimed at reducing microbiological contamination of chicken products
- develop and evaluate a tool for the electronic assessment of odours from chicken farms

Expected key outputs for 2008–09

- resources used and environmental emissions arising from the production of chicken meat in Australia quantified and opportunities for more efficient resource and emission management identified
- progress towards the refinement and application of near infrared spectroscopy (NIR) tools for predicting the nutritional composition of feed ingredients
- information provided on the potential and/or nutritional value of sorghum, triticale, field peas and pearl millet as feed sources for the chicken industry
- the potential of certain sugars to stimulate gut development and long-term productivity when fed to the young chick evaluated
- the potential for using particular enzyme treatments to enhance the nutritional value of two legume species for poultry diets determined
- information on options for more cost-effective disposal of hatchery waste to become available
- a technique for differentiating between *Campylobacter jejuni* strains established and used to demonstrate which strains from poultry and other animal species are associated with Campylobacter infection in humans
- significant progress towards the development of improved disease prevention, management and diagnostic techniques in areas targeted by the R&D Advisory Committee
- updated information on the nutritional composition of Australian chicken meat to become available

Expected key outcomes for 2008–09

- industry participants able to identify and exploit opportunities for more efficient resource use and for reducing their environmental emissions
- the value of poultry litter enhanced as a result of a greater appreciation of its value as fertiliser
- improved efficiency of conversion of feed ingredients into chicken meat achieved through an enhanced understanding of the nutritional composition of and limitations to the use of several existing and new varieties of feed grains
- the risk of pathogen emissions from chicken farms to the environment confirmed to be very low
- wider adoption across industry of agreed bird welfare standards and assurance programs
- greater appreciation of the importance of biosecurity across industry and better implementation of agreed biosecurity standards

Key performance indicators

- industry adoption of two new flock health diagnostic or management tools
- successful identification, through industry consultation, of two key new areas for program research
- identification of one key strategy for reducing the fossil fuel input into chicken meat production
- completion of at least seven significant research projects
- improvements demonstrated in key microbiological parameters affecting the safety of chicken meat

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002325	The biosecurity of mass poultry mortality composting	Dr Kevin Wilkinson	03 83412412
PRJ-002493	Nuffield Farming Scholarship for an Australian Chicken Meat Grower	Mr Jim Geltch	03 54800755
PRJ-002819	Test to differentiate Rispens CVI988 vaccine from wild type MDV	Dr Stephen Walkden-Brown	02 6773 5152
PRJ-002798	Evaluating food-borne pathogen transfer associated with partial and full litter re-use	Ms Nalini Chinivasagam	07 33629454

Chicken Meat budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	-	-	-
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	953,170	997,577	1,396,244	1,510,916	1,310,000	1,765,000
External Contributions	376,206	104,989	61,801	31,649	60,486	35,000
Statutory Industry Levies	930,915	997,577	1,005,770	1,014,288	1,049,334	1,090,000
Interest	*154,980*	*161,119*	*194,875*	*165,000*	*170,000*	*200,000*
Industry Levy Penalties	*2,063*	*6,353*	*544*	-	*2,000*	-
Royalties	*48,248*	*34,477*	*73,059*	*24,000*	*37,747*	*25,000*
Project Refunds	*8,210*	*110,269*	*33,250*	-	*126,117*	-
Publications	*10,308*	*1,487*	*8,794*	*5,000*	*300*	*5,000*
All Other Income	-	-	-	-	-	-
Other Income	223,809	313,705	310,522	194,000	336,165	230,000
Total Income	**2,484,100**	**2,413,848**	**2,774,337**	**2,750,853**	**2,755,984**	**3,120,000**
R&D Expenditure						
RESEARCH	2,243,922	2,134,349	1,886,446	2,800,000	2,490,000	3,200,000
Advisory Committee Expenses	30,214	29,678	45,019	55,000	47,124	55,000
External Research Management[1]	72,890	76,534	80,360	84,378	145,000	150,000
Employee Expenditure	-	-	-	-	-	-
Communications	15,671	1,873	8,943	3,000	3,000	3,000
Meeting Expenses	-	-	-	-	*10,876*	-
Travel and Accommodation	*1,972*	*6,965*	*4,359*	*10,447*	*10,000*	*15,000*
Other Expenses	-	-	-	*800*	*92*	*1,000*
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	*17,036*	*21,867*	*21,631*	*22,000*	*11,516*	*22,000*
Other Expenses	19,008	28,832	25,990	33,247	32,484	38,000
Program Management Fees	31,500	37,500	39,375	39,375	39,375	40,000
Total R&D Expenditure	**2,413,205**	**2,308,766**	**2,086,133**	**3,015,000**	**2,756,984**	**3,486,000**
Operating Result	**70,895**	**105,082**	**688,204**	**(264,147)**	**(1,000)**	**(366,000)**
Retained surpluses at beginning of period	2,679,564	2,750,459	2,855,541	3,331,001	3,543,745	3,542,745
Retained surpluses at end of period	**2,750,459**	**2,855,541**	**3,543,745**	**3,066,854**	**3,542,745**	**3,176,745**

1. Represents fee for R&D management services paid to the Austrailan Chicken Meat Federation Inc.

Honeybee

Research Manager

Ms Margie Thomson
Ph: 02 6271 4130
Fax: 02 6271 4199
Email: margie.thomson@rirdc.gov.au

Objective

To improve the productivity and profitability of the Australian beekeeping industry.

Strategic plan and internet accessibility

This program has it own five-year R&D plan, accessible in hard copy and at http://www.rirdc.gov.au

Sources of fund

The Honeybee R&D Program is funded by statutory levies paid by industry participants. The levy is matched on a dollar-for-dollar basis by the Australian Government up to 0.5 per cent of the gross value of farm production.

Total R&D expenditure budget

$550 000

Background

Average Australian honey production ranges between 20–30 000 tonnes per year. New South Wales is the largest producer (41%), followed by Victoria (19%), Queensland (15%), South Australia (13%), Western Australia (8%) and Tasmania (4%). The GVP is estimated to average around $60–70 million. Average production per hive was 118 kilograms per hive in 2005 (Capilano).

There are around 10 000 apiarists (amateur, part time and commercial) in Australia operating around 600 000 hives. Over 70% of hives are operated by commercial beekeepers managing more than 200 hives. Approximately 60% of production is estimated to come from around 250 businesses (ABARE 2003). Most commercial honeybee keepers are regionally based. Domestic honey consumption is likely to remain relatively elastic with other spreads representing a close substitute as retail prices increase. There is a currently strong demand for hive pollination services to the horticultural industry.

International bulk honey prices peaked at US$1600 per metric tonne in 2003, but fell dramatically in 2005 to US$800 per metric tonne (Wescobee 2005). International prices have fallen further in the last 12–18 months. Key international honey producing countries are China, the US and Argentina. Australia is the 9th largest producer.

Australia normally imports a relatively small quantity of honey, apart from drought years ($12 million in 2004, $38.3 million in 2003 (DFAT 2005). Australian exports average around 25–30% of its annual honey production (Benecke 2007)[1]. Prices are highly variable depending on international market conditions.

There are around 10 000 apiarists (amateur, part time and commercial) in Australia operating around 600 000 hives.

Future growth of the honeybee industry is dependent on international demand and supply conditions, access to public flora resources and the industry's ability to cope with pests and diseases.

Varroa mite is an external honeybee parasite that attacks both the adults and the brood and can kill honeybee colonies. The introduction of varroa mite would have a dramatic impact on domestic production and the industry is reliant on R&D to address this and other potential threats from pests and diseases.

There continues to be strong support for the program by industry and opportunities for productivity enhancements through improved technology are significant and are a key component of the RIRDC Honeybee Program. Potential for value adding is most likely through creating demand for honey through other uses (CIE 2005).

The industry continues to lobby for access to native flora, as without this commercial beekeeping would not exist.

Key long-term strategies

- prepare the industry to manage potential biosecurity risks, especially varroa mite
- increase profitability by improving hive husbandry and management practices
- continue honeybee access and research into melliferous resources on public and freehold land
- improve methods of extracting, storing and transporting honey

1 Benecke, FS (2007) Commercial Beekeeping in Australia. RIRDC Publication No.07/059

- increase the use of honey in the food industry
- determine therapeutic values of specific floral species
- improve communications between the R&D sector, the honeybee and associated industries

Key strategies for 2008–09

- formation of an alliance—Pollination Australia—and implementation of key R&D projects (jointly funded by HAL and RIRDC) to increase industry preparedness for the incursion of varroa mite or other serious pests and diseases into Australia
- continue to identify, understand and develop controls and treatments for pest and diseases, including small hive beetle and varroa mite
- increase productivity and profitability by improving hive husbandry, natural and artificial/supplementary nutrition and management practices (including pollination)
- provide production and financial benchmarks
- continue to support research into melliferous resource access and availability
- determine therapeutic and prebiotic values of honey
- maintain communications between the R&D section, the honeybee industry and associated industries serviced by the pollination industry

Expected key outputs for 2008–09

- identification of biological control options for chalkbrood and small hive beetle
- testing completed of pollen substitutes for nutritional value
- determination of the value-adding potential of the prebiotic components of honey
- production of a report outlining the therapeutic properties of honey
- provision of support for research extension, adoption, dissemination and exchange
- an industry based alliance—Pollination Australia—formed with a business plan, and risk management and education and training strategies finalised and implemented

Expected key outcomes for 2008–09

- improved understanding and management of bee diseases and pests
- increased understanding of honeybee nutrition and artificial substitutes
- greater understanding of the beneficial properties of honey
- greater understanding of issues relating to beekeeper profitability
- greater understanding of melliferous resources in plantations
- broad agricultural industry awareness of the importance of pollination services by honeybees
- broad agricultural industry awareness of the risks associated with incursion of major honeybee pests and diseases such as varroa mite

Key performance indicators

- participation of researchers at state beekeepers conferences
- support for an annual researcher meeting
- completion of at least seven research reports and dissemination of results
- promotion of the Honeybee Program in at least three external media
- successful formation of an industry alliance between the pollination/honeybee industry and agricultural and horticultural industries that rely on pollination services Pollination Australia
- the business plan of the industry alliance Pollination Australia finalised and implemented in early 2008–09

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002933	Tasmanian Floral Data Base	Mark Leech	03 6334 0915
PRJ-002916	Hygienic behaviour of the Western Australian bee breeding program	Dr Robert Manning	08 9368 3567
PRJ-002862	A study of *Nosema ceranae* in Australia	Michael Hornitzky	02 4640 6311

**** still to be finalised***

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	-	-	50,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	175,526	189,672	273,167	312,278	236,600	300,000
External Contributions	-	-	170,000	-	130,000	-
Statutory Industry Levies	182,324	197,176	281,922	310,000	293,398	300,000
Interest	*10,525*	*12,897*	*19,523*	*13,500*	*26,101*	*13,000*
Industry Levy Penalties	*976*	*749*	*479*	*-*	*785*	*-*
Royalties	*-*	*-*	*-*	*-*	*-*	*-*
Project Refunds	*397*	*353*	*10,860*	*-*	*29,248*	*-*
Publications	*10,331*	*8,298*	*1,862*	*6,000*	*10,000*	*5,000*
All Other Income	*-*	*-*	*-*	*-*	*319*	*-*
Other Income	22,229	22,297	32,724	19,500	66,453	18,000
Total Income	**380,079**	**409,145**	**757,813**	**641,778**	**726,450**	**668,000**
R&D Expenditure						
RESEARCH	299,535	313,347	430,663	562,000	728,000	550,000
Advisory Committee Expenses	9,441	14,959	28,116	15,000	20,000	15,000
External Research Management	-	-	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	18,768	8,378	16,799	10,000	33,144	25,000
Meeting Expenses	*-*	*-*	*-*	*-*	*54,000*	*-*
Travel and Accommodation	*818*	*3,223*	*1,292*	*5,000*	*30,000*	*5,000*
Other Expenses	*396*	*-*	*-*	*1,000*	*2,300*	*1,000*
Consulting Fees	*-*	*-*	*-*	*-*	*-*	*-*
Temporary Staff	*-*	*-*	*-*	*-*	*-*	*-*
Couriers	*-*	*-*	*-*	*-*	*144*	*-*
Levy Collection Costs	*16,454*	*17,102*	*17,250*	*17,700*	*19,852*	*16,000*
Other Expenses	17,668	20,325	18,542	23,700	106,296	22,000
Program Management Fees	13,800	14,000	14,700	14,700	14,700	30,000
Total R&D Expenditure	**359,212**	**371,009**	**508,820**	**625,400**	**902,139**	**642,000**
Operating Result	**20,867**	**38,136**	**248,993**	**16,378**	**(175,689)**	**26,000**
Retained surpluses at beginning of period	175,610	196,477	234,613	323,051	483,606	307,917
Retained surpluses at end of period	**196,477**	**234,613**	**483,606**	**339,429**	**307,917**	**333,917**

Rice

Research Manager:

Ms Margie Thomson
Ph: 02 6271 4130
Fax: 02 6271 4199
Email: margie.thomson@rirdc.gov.au

Objective

To improve the profitability and sustainability of the Australian rice industry

Strategic plan and internet accessibility

This Program has its own five-year R&D plan accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

The Rice R&D Program is funded by statutory levies paid by industry participants. This levy revenue is matched on a dollar-for-dollar basis by the Australian Government up to 0.5 per cent of the gross value of farm production.

Total R&D expenditure budget

$990 000

Background

The Australian rice industry is primarily based in the Murrumbidgee and Murray valleys of southern New South Wales.

Over the last 20 years the number of farm businesses that have predominantly grown rice has declined as the average area of the farms has increased. ABARE estimate there are currently around 1500 rice farm businesses.

Australian rice production peaked in 2001 with over 1.7 million tonnes being produced. The amount of rice produced in 2003 to 2005 was severely affected by poor climatic conditions with only 390 000 tonnes in 2003, 528 000 tonnes in 2004 and 305 000 tonnes in 2005. Weather conditions improved in 2006 with just over 1 million tonnes being produced. However, rice production was less than 167 000 tonnes in 2007 due to a return to severe drought conditions. In 2008, it is expected to be less than 15 000 tonnes (less than 1% of annual average production). Rice yields averaged close to 9 tonnes per hectare over the last five years.

Gross value of production has fluctuated over the last five financial years due to changes in production caused by severe drought conditions in 2003, 2004 and 2005. GVP has averaged $152 million over the last five financial years, peaking at $255 million in 2005–06 (ABARE). GVP was estimated to be $23 million in 2007–08.

Prices received by rice growers are highly variable with rice paddy returns averaging $204 per tonne in 2000–01 and $299 per tonne in 2003–04. Returns averaged around $270 per tonnes in 2006–07.

Rice seeding

Domestic per capita rice consumption has increased from 2 kg per person in the late 1970s to 11 kg per person in recent years. International demand for Australian rice is also expected to increase, despite protection barriers restricting sales in a number of potential key markets.

Only 6.3% of the world's rice production is traded. This is valued at US$8.6 billion. Trade has remained limited due to self-sufficiency based production policies, high levels of subsidies for domestic production and high levels of tariffs on imports. Key exporters are Thailand, India, the United States and Vietnam.

In a normal year Australia exports approximately 80% of the annual crop (valued at $800 million to more than 80 countries, including in Asia, the Pacific and the Middle East). Due to drought conditions in 2005, Australia became a net importer both in value and volume. The negative trade balance was corrected in 2006 with improvements to climatic conditions.

During a 'normal' growing season, a crop of 0.8–1.2 million tonnes can usually be expected. However, average rice production has been severely affected by water availability due to poor seasonal conditions, water prices and temperature variability during the growing season. Continued efficiency improvements to water usage will be integral to the future profitability and sustainability of the industry.

Increased collaboration and linkages with other research organisations and funding bodies is a key aim of the rice program. This was initially prompted by the first three years of

drought when income was severely reduced resulting in a severe decrease in the size of the program. Greater collaboration and linkages with other funding bodies would provide some insulation from fluctuations in rice generated income. It would also provide some economies of scale in research activities by linkages with international research organisations (including the International Rice Research Institute).

Key long-term strategies

- provide varieties that result in increased water efficiency at the farm level and that retain the key quality attributes required to market the product both domestically and internationally
- improve crop establishment, agronomy/physiology, nutrition and protection from weeds, pests and diseases
- improve the profitability and sustainability of the rice-based farming system
- foster and achieve innovation, both on and off farm
- support ongoing Australian rice research and extension capacity
- optimise participation and develop people's potential to contribute to the industry

Key strategies for 2008–09

Due to the significant reduction in R&D funding in 2008–09 there is unlikely to be an open call for new research proposals in 2009–10. To ensure the long-term sustainability of the program the key strategies for 2008–09 will be to:

- maintain key activities of the rice breeding and quality evaluation program to increase efficiency at farm level (with special emphasis on cold tolerance, yield and quality)
- understand, quantify and manage the spatial variability of rice growth
- support key Australian rice research and extension capacity
- develop whole-farm planning and assessment tools to ensure profitability and environmental sustainability.

Expected key outputs for 2008–09

- progress toward the development of cold-tolerant rice varieties
- enhance cooperative efforts with international, Commonwealth, state and industry-based agencies to improve water management and the changing climatic landscape
- dissemination of information on new farming techniques, especially through the Rice Field Day held in February each year

Expected key outcomes for 2008–09

- retain key rice research and extension staff involved in the Rice Program
- further advancement towards the development of cold tolerant rice varieties
- increased understanding of new farming techniques for improved productivity
- promotion of completed and ongoing research supported by the Rice R&D Program
- enhanced measurability and assessability of farming activities

Key performance indicators

- the program's core research capacity has been retained
- increased collaboration with international, Commonwealth, state and industry partners
- development of a new cold tolerant rice variety
- increased understanding of alternative farm practices
- industry uptake of new identified innovations

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
*PRJ-002927	Rice cold tolerance for yield stability and water use efficiency (2)	Peter Snell	02 6951 2742
*PRJ-002944	Rice quality V	Rachelle Ward	02 6951 2656
*PRJ-002942	Rice improvement III	Dr Russell Reinke	02 6951 2516
*PRJ-002854	Weed management in Australian rice production	Malcolm Taylor	03 5872 2892
*PRJ-002880	Revision of Rice R&D Plan	Tony Byrne	02 6247 3642
*PRJ-002946	RGA communication project	Victoria Taylor	02 6953 0433
*PRJ-002896	Rice yield and water productivity extension	John Lacy	02 6951 2738
*PRJ-002897	Approaches to manage spatial variability of rice growth and yield	Geoff Beecher	02 6951 2725

** Still to be finalised*

Rice budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	-	-	140,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	752,507	1,061,667	828,833	896,000	523,334	215,000
External Contributions	84,304	635,621	-	-	-	-
Statutory Industry Levies	1,052,548	609,987	3,127,611	386,000	496,023	21,000
Interest	*96,693*	*60,489*	*176,387*	*97,800*	*112,000*	*70,000*
Industry Levy Penalties	*-*	*-*	*-*	*-*	*-*	*-*
Royalties	*-*	*-*	*-*	*-*	*-*	*-*
Project Refunds	*117,151*	*-*	*16,718*	*200*	*67,733*	*-*
Publications	*1,618*	*33*	*930*	*-*	*36*	*-*
All Other Income	*3,125*	*3,748*	*2,009*	*-*	*3,104*	*-*
Other Income	218,587	64,270	196,044	98,000	182,873	70,000
Total Income	**2,107,946**	**2,371,545**	**4,152,488**	**1,380,000**	**1,202,230**	**446,000**
R&D Expenditure						
RESEARCH	2,419,792	1,888,551	2,377,734	2,000,000	1,708,000	990,000
Advisory Committee Expenses	86,680	67,797	82,572	50,000	56,000	40,000
External Research Management	-	-	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	5,261	675	6,040	2,000	9,400	2,000
Meeting Expenses	*-*	*-*	*-*	*-*	*900*	*-*
Travel and Accommodation	*2,841*	*4,757*	*12,451*	*8,000*	*3,000*	*6,000*
Other Expenses	*-*	*-*	*-*	*2,000*	*2,230*	*2,000*
Consulting Fees	*-*	*-*	*-*	*-*	*-*	*-*
Temporary Staff	*-*	*-*	*-*	*-*	*-*	*-*
Couriers	*-*	*-*	*-*	*-*	*-*	*-*
Levy Collection Costs	*1,710*	*2,056*	*2,893*	*2,000*	*3,200*	*2,000*
Other Expenses	4,551	6,813	15,344	12,000	9,330	10,000
Program Management Fees	75,000	50,000	75,000	75,000	75,000	50,000
Total R&D Expenditure	**2,591,284**	**2,013,836**	**2,556,690**	**2,139,000**	**1,857,730**	**1,092,000**
Operating Result	**(483,338)**	**357,709**	**1,595,798**	**(759,000)**	**(655,500)**	**(646,000)**
Retained surpluses at beginning of period	887,605	404,267	761,976	2,335,194	2,357,774	1,702,274
Retained surpluses at end of period	**404,267**	**761,976**	**2,357,774**	**1,576,194**	**1,702,274**	**1,056,274**

Horse

Research Manager

Dr Nigel Perkins
Ph: 07 4632 0636
Email: nigel@ausvet.com.au

Objective

To assist in developing the Australian horse industry and enhancing its export potential.

Strategic plan and internet accessibility

This Program has its own five-year R&D plan accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

This program is funded by voluntary industry revenue and matching RIRDC funds. The industry is seeking to put these arrangements on a statutory basis.

Total R&D expenditure budget

$1 000 000

Background

The number of horses in Australia is estimated to be 1.2 million. Of these between 10–50% are registered. There are estimated to be 300 000 feral horses—most in the north of Australia. In the 2005–06 breeding season 29 070 thoroughbred mares were covered by 883 stallions. The mares produced 17 854 foals (64% success rate) of which 13 618 were registered.

Considering all sectors of the horse industry, breeding and racing (particularly thoroughbreds) contributes the greatest GVP. In 2005–06 the thoroughbred industry in Australia had 379 race clubs maintaining 355 racetracks. These clubs held 2752 race meetings during which 19 963 races were conducted with 195 720 starters.

The majority of elite thoroughbred stallions, mares and horse farms are owned by a relatively small number of individuals or corporations. Future growth of the thoroughbred industry is directly related to prize money, which is in turn related to wagering. Both have continued to increase annually and as such the racing industry is likely to continue to expand.

Australia has the second largest number of registered thoroughbreds in the world (with the United States having the largest). In 2005–06, 1695 thoroughbred horses were exported (with 892 being imported). The majority are exported to New Zealand with significant percentages going to Singapore, Hong Kong, Korea, Macau and China. Eighty per cent of thoroughbred imports came from New Zealand, with 10% from the United States and 3-4% each from Great Britain and Ireland.

Reducing the number of horses falling in eventing is the most important factor in lowering the number of injuries to riders and horses. Safety for Horses and Riders in Eventing—The SHARE database, *Pub. No. 08/027.*

In addition to the thoroughbred industry, there are many other components of the horse industry. A significant example is the Australian Stock Horse Society. The society boasts more than 70 individual horse breed associations, 9500 member individuals and in excess of 170 000 horses. The successful performance of this society in recognised throughout Australia and the world with exports to the United Kingdom, the United States, Africa, New Zealand and Asia.

Other major performance breeds in Australia include Arabian and Quarter horses. The Arabian Horse Society of Australia, had 117 331 horse registrations and 3771 members in 2005. The Australian Quarter Horse Association has been enjoying approximately 7000 new horse registrations in each of the past few years with 6000 members and over 139 000 horses registered.

Australia has a long tradition of elite performance in Olympic equestrian disciplines, particularly in eventing but also dressage, show jumping, vaulting, and carriage driving. All the activities are under the overall auspices of the Equestrian Federation of Australia (EFA). The EFA has been critical in the process of assisting Australian horses and riders to compete successfully in international competitions. Australia now has

several horse and rider combinations participating in each of the prestigious European show jumping, dressage and eventing competitions. Australia is expected to field teams in each of these disciplines at the 2008 Beijing Olympic Games. The EFA also oversees the FEI (Fédération Equestre Internationale) aspects of endurance riding, which continues to increase in popularity in Australia. There is a growing international market for Australian-bred endurance horses (mostly Arabians).

The pony club movement in Australia is a grassroots organisation that underpins the social fabric of a large sector of Australia's junior and youth constituency. Since its inception in 1946, Pony Club Australia has grown to the extent that it now has around 40% of the junior membership in the world. Pony Club Australia is a world leader in encouraging young people to ride. Australian pony club riders enjoy international and trans-Tasman competition success.

A major problem for the horse industry is the persisting drought. With a loss of available grazing and with the increasing cost of feed (doubling over the past 12 months), many farm, breeding, 'backyard' and/or 'pet' horses have been sent to sale. Of those horses passing through sales, around 30 000 pa are processed for human consumption, with this meat being exported.

Australia has a reputation of being free of many of the major endemic horse diseases. This includes freedom from equine influenza (EI), African horse sickness, surra, West Nile virus, and glanders to name but a few. An initiative by the Australian Horse Industry Council to develop a levy on new horse registrations in order for the horse industry to become a signatory to the Emergency Animal Disease Response Agreement is likely to be supported and enacted in 2008–09.

There is currently no industry levy for the Horse R&D Program and all funds are provided as donations. Since the commencement of the Horse Program financial support has been received from Racing Victoria, Equestrian Federation of Australia, the Australian Stock Horse Society, the Australian Quarter Horse Association, the Australian Equine Veterinary Association, the Australian Thoroughbred Breeders Club, Hawkesbury, Mr Gerry Harvey, Coolmore Australia, Tyreel Stud, Alanbridge Stud, Logans Insurance, Howard Insurance, Peptech Animal Health, Magic Millions, International Racehorse Transport, the Paint Horse Association, Ms Barb Vial, Dolly van Zaane and the Australian Harness Racing Council. Racing Victoria Limited contributed $200 000 to the RIRDC Horse Program in 2006–07 with a commitment for three years, contingent on the outcomes of a review of program outputs after the first twelve months. The research program has been substantially expanded as a result of this investment.

The EI outbreak has been the major issue facing the industry since August 2007. The outbreak has resulted in a major disruption to all sectors of the horse industry, in NSW and Queensland in particular, including major adverse socio-economic impacts on a wide range of operators dependent on the horse industry for income. The outbreak appears to be under control at the time this Annual Operational Plan 2008–09 was prepared and there is growing confidence that Australia will be able to successfully declare the influenza virus to have been eradicated and that all restrictions on horse movements and other activities may be removed by mid-2008. There will be ongoing impacts on the horse industry, including compliance issues related to recording and reporting horse movements and requirements for certification of immune status or vaccination status.

The EI outbreak also caused considerable disruption to the start of the 2007 breeding season and there were concerns that the number of mares bred in 2007 would be reduced with longer term impacts on future foaling crops and yearling availability. These concerns appear to have been allayed by the release of figures indicating that the number of mares bred was close to previous years. There may be a small decline in the number of foals born in 2008.

Loss of racing revenue through the EI outbreak has important ramifications for the industry and for RIRDC in particular given that RIRDC is dependent on financial contributions from the racing industry as well as other sectors of the broader horse industry.

The widespread drought conditions affecting much of Australia in recent years have impacted the horse industry largely through availability and cost of feedstuffs and issues such as water availability, weed control and animal welfare.

The rising Australian dollar has the potential to impact exports of Australian horses. The Australian economy has been very positive for several years though recent falls in stock market indicators, rising inflation and rising interest rates are all raising concerns about impacts on consumer spending. These issues have the potential to impact horse sales through 2008.

Key long-term strategies

- research disease prevention, diagnosis and treatment
- foster industry development, environment and welfare
- develop animal and human health and safety
- research animal breeding and genetics

Key strategies for 2008–09

Strategies for the 2008–09 year will be based heavily on the strategies outlined above with the addition of the following activities:

- consultation with industry stakeholders to identify and prioritise researchable questions and match them with R&D provider capacity. This approach will be used to guide development of additional projects and other R&D activity to ensure that all available funds are expended to achieve optimal returns in terms of quality and applicability of outputs
- further develop a small number of

commissioned projects to address key areas arising from the five-year plan and from the consultation process outlined above
- assessment of activities in the area of objective 5 (effective communication) to strategically increase investment in this area consistent with the aims of the five-year plan
- supporting emerging research talent through provision of travel grants and scholarships

Expected key outputs for 2008–09

- findings of two projects assessing risk factors for gastric ulceration
- understanding of the range of observable pathology in pre-sale radiographs of yearlings
- assessment of the usefulness of urine samples in DNA testing to confirm donor identity
- assessment of placentitis as a cause of foetal loss and the value of various treatments
- assessment of the pathogenesis of exercise induced pulmonary haemorrhage
- assessment of methods for generating horse embryonic stem cells
- findings from studies on the pathogenesis of equine amnionitis and foetal loss
- identification of horses with resistance to small strongyles
- formation of an email list and RIRDC attendance at Equitana

Expected key outcomes for 2008–09

- improved understanding of factors influencing gastric ulceration in Australian horses and recommendations for early identification, management and prevention of gastric ulcers
- understanding of normal and abnormal findings in yearling radiographs and recommendations for interpretation and prognosis of radiographs in pre-sale animals
- improved understanding of factors associated with increased pregnancy loss and recommendations for optimising survival through pregnancy and delivery of a live foal at term
- improved understanding of exercise induced pulmonary haemorrhage and recommendations for management and prevention
- improvements in stem cell research and its application in the horse industry
- improved understanding of parasite resistance and ability to identify horses with resistance
- improved communication of program activities and research outcomes

Key performance indicators

- presentation of research outcomes at one key industry meeting
- improved communication between RIRDC and R&D providers through email list and attendance at equine events
- level of industry adoption of management recommendations of high-risk pregnancies in broodmares
- reference to new research outcomes in industry-related journals
- release of eight research reports addressing industry-identified research needs

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002267	Investigation of the mechanism of insulin-induced laminitis in horses	Christopher Pollitt	07 3365 2063
PRJ-002288	The science of horse training: implications for rider safety and horse welfare	Paul McGreevy	02 9351 2810
PRJ-002363	In vitro optimisation of conditions for laryngeal reinnervation surgery	Eleanor Mackie	03 8344 7360
PRJ-002394	Computational modeling of in vivo contact stresses in the equine fetlock joint	Chris Whitton	03 97312268
PRJ-002468	Diagnosis and control of small strongyle parasites of horses	Nicholas Sangster	02 6933 4107
PRJ-002529	Snake envenomation in horses and its detection by rapid immunoassay.	Sally Church	03 9731 2340
PRJ-002589	Breath sampling for prediction of *Rhodococcus equi* infection in neonatal foals	Catherine Chicken	02 6545 2591
PRJ-002591	Investigation of methods for storage of stallion semen at ambient temperature.	Judy Cawdell-Smith	07 5460 1166
PRJ-002592	Histopathology of mares aborting due to equine amnionitis and foetal loss.	Judy Cawdell-Smith	07 5460 1166

Horse budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	342,000	323,489	461,899	550,000	550,000	450,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	401,625	308,889	533,779	550,000	550,000	550,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	*7,926*	*7,666*	*25,151*	*10,000*	*37,000*	*10,000*
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	*7,751*	-	*4,910*	-
Publications	*24,227*	*27,790*	*49,467*	*25,000*	*25,000*	*25,000*
All Other Income	-	-	-	-	-	-
Other Income	32,153	35,456	82,369	35,000	66,911	35,000
Total Income	**775,778**	**667,834**	**1,078,047**	**1,135,000**	**1,166,911**	**1,035,000**
R&D Expenditure						
RESEARCH	567,882	578,658	834,815	1,100,000	1,100,000	1,000,000
Advisory Committee Expenses	11,977	20,378	41,719	22,200	11,000	22,000
External Research Management	15,008	19,293	32,094	35,000	25,000	37,000
Employee Expenditure	-	14,789	-	-	-	-
Communications	4,426	26,623	31,719	45,000	35,000	45,000
Meeting Expenses	-	-	-	-	*1,500*	-
Travel and Accommodation	*763*	*7,125*	*5,657*	*3,000*	*8,500*	*3,000*
Other Expenses	*876*	*30*	*300*	-	*1,010*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	1,639	7,155	5,957	3,000	11,011	3,000
Program Management Fees	13,500	13,500	15,600	16,000	16,000	30,000
Total R&D Expenditure	**614,432**	**680,396**	**961,904**	**1,221,200**	**1,198,011**	**1,137,000**
Operating Result	**161,346**	**(12,562)**	**116,143**	**(86,200)**	**(31,100)**	**(102,000)**
Retained surpluses at beginning of period	236,208	397,554	384,992	299,192	501,135	470,035
Retained surpluses at end of period	**397,554**	**384,992**	**501,135**	**212,992**	**470,035**	**368,035**

Fodder Crops

Research Manager

Ms Annette Sugden
Ph: 02 6271 4138
Fax: 02 6271 4199
Email: annette.sugden@rirdc.gov.au

Objective

To facilitate the development of a sustainable and profitable Australian fodder industry.

Strategic plan and internet accessibility

The program has its own five-year R&D plan accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

The Fodder Crops R&D Program is funded through a mixture of RIRDC Core funds and a voluntary levy on both domestic hay and exports of cereal hays.

Total R&D expenditure budget

$390 000

Background

Fodder production includes hay of all types, chaff, vetch, and pelletised feed. There are around 20 000 producers on 46 000 properties across Australia producing fodder. The domestic market accounts for around 85% of consumption with the largest user groups comprising the horse, dairy and beef feedlot industries. Fodder is also widely used in horticulture for mulches and for erosion control.

Fodder production is concentrated in Victoria (45%) and NSW (18%), SA and WA contribute 11% each to production. Production data is limited as there is no formal production levy and around 30–35% of the hay and silage produced is traded off-farm. Annual hay production ranges between 4 900 000 and 7 600 000/mt per annum. In 2006–07 this figure was around 4 million tonnes. Around 2 million tonnes of silage is produced each year. The Australian Fodder Industry Association estimates the GVP for 2006–07 to be $1.4 billion including hay, straw and silage. The majority of fodder growers are not specialist producers.

In 2006–07, fodder prices within the domestic market were at all-time highs in most regions. However, the commitments of Australian fodder exporters meant that much of the high-quality fodder was exported. Australia is facing enormous challenges in marketing hay internationally. Ongoing drought, growing domestic demand, high domestic prices and the high Australian dollar all combine to make the future uncertain.

Fodder production includes hay of all types, chaff, vetch, and pelletised feed. There are around 20 000 producers on 46 000 properties across Australia producing fodder.

The industry has focused strongly on addressing market requirements, establishing new markets and developing a high-quality product, with the majority of growers producing hay and silage targeted at particular markets.

There has been a short-term increase in the number of potential commercial fodder product consumers from members of the dairy, racing and feedlot industries as a result of the drought. The seed and grain industries have reported an increased number of their sector producers cutting crops as hay and taking advantage of higher prices to increase income.

The industry outlook is good if the drought breaks. While this will bring with it reduced prices for fodder crops, it will also improve crop quality and reduce the number of farmers facing marginal returns from marginal crop volumes.

In 2005–06 Australia imported 79 tonnes of fodder valued at $69 000 [2] Imports have trended downward over the past five years, however, the impact of drought has caused an interim spike in volumes imported. Fodder exports in 2005–06 totalled 845 000 tonnes valued at $230 million. Of this, the Asian export market consumed around 750 000 tonnes. The animal feeds industry in East Asia is estimated to be valued at US$10 billion, and it is believed that a large untapped demand will enable the industry to develop many new opportunities.

Japan is by far the greatest importer of hay and chaff from Australia with expanding markets in the Middle East,

[2] *Includes hay and chaff, lucerne hay and chaff, lucerne meal and pellets and vetch (excluding hay and chaff). (ABS, 2005)*

Korea and Taiwan. In 2005–06, Japan imported over 625 000 tonnes of Australian hay and chaff—comprising over 80% of the Australian fodder crops export market and valued at over $170 million to the Australian economy. However, drought conditions, reduced production and unfavourable exchange rates have impacted significantly on the industry's ability to service international export contracts in both the quality and quantity required.

In 2006 the Japanese government set new standards for permissible levels of residue in imported hay and added inspection penalties to exporters sending hay that had residue levels above these limits. These limits are lower than the permissible levels in Australia and include a wider range of chemicals than analytical laboratories in Australia currently include in their testing regime. The program has addressed this by leading a research project designed to develop tests to ensure these residue level infringements can be detected before export.

The drought has impacted heavily on the hay export industry, lowering both the quality and quantity of hay available for export. This has reduced the sector's ability to meet contractual requirements and has also reduced the contributions flowing into research from the export sector. The Australian Government's fodder summits in 2006–07 and numerous regional workshops have highlighted the importance of a quality, reliable fodder supply and illustrated the heavy reliance of linked industries such as the dairy and racing industries on fodder supplies. To date, however, there has been no further support for fodder research from these sectors.

The RIRDC Fodder Crops R&D Program is the only program directly funding fodder research. The industry does not currently have an R&D levy and current contributions to R&D are voluntary—mostly sourced from the export sector. The peak industry body, the Australian Fodder Industry Association (AFIA) has been a strong supporter of the R&D Program. AFIA submitted an application to the Department of Agriculture, Fisheries and Forestry's Advancing Agricultural Industries Program in 2007, which was successful. Using this grant, AFIA will address key issues facing the fodder industry, including establishment of a framework for development of a fodder levy.

Key long-term strategies

- improved industry understanding of fodder quality and management
- support for innovative plant breeding and germplasm evaluation
- improved understanding of crop agronomy
- development of technologies to improve hay and silage production, processing and transport
- support for industry biosecurity and environmental management
- support for effective industry communication and information flows
- improved identification of research gaps
- identification of new markets and products to support continued industry growth

Key strategies for 2008–09

- support for innovative plant breeding and germplasm evaluation for industry
- improved understanding of crop agronomy – including nutrition, disease, weed, pest and micro-organism management

Expected key outputs for 2008–09

- identification of fungicides for management of diseases and quality in export oaten hay
- further research into improved varieties of oats for hay
- promotion of research outcomes at the Australian Fodder Industry Association Conference

Expected key outcomes for 2008–09

- progress towards methodologies to improve the quality, colour and yield of export oaten hay
- progress in further development of improved oat varieties for export and domestic hay production

Key performance indicators

- fodder oat breeding program maintained despite drought
- a range of registered and non-registered fungicides on controlling septoria stem and leaf rust and/or bacterial leaf blight in oaten hay evaluated
- release of one new research report

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002287	Adoption of the AFIA ChemCheck system by the export fodder industry	John Black	02 4753 6231
PRJ-002298	Development of improved oat varieties for hay production: national program III	Pamela Zwer	08 8303 9485

Fodder Crops budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	389,579	316,788	225,000	200,000	200,000	250,000
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	147,115	183,082	196,089	200,000	158,000	200,000
RIRDC Salary Contribution	-	-	-	-	-	-
Statutory Industry Levies	-	-	-	-	-	-
Interest	*16,716*	*18,889*	*20,902*	*5,000*	*17,000*	*7,000*
Industry Levy Penalties	*-*	*-*	*-*	*-*	*-*	*-*
Royalties	*2,638*	*24,050*	*40,034*	*25,000*	*25,000*	*15,000*
Project Refunds	*-*	*-*	*-*	*-*	*1,686*	*-*
Publications	*776*	*962*	*14,640*	*1,000*	*2,000*	*1,000*
All Other Income	*-*	*-*	*-*	*-*	*-*	*-*
Other Income	20,130	43,901	75,576	31,000	45,685	23,000
Total Income	**556,824**	**543,771**	**496,665**	**431,000**	**403,685**	**473,000**
R&D Expenditure						
RESEARCH	430,683	545,923	523,281	375,000	377,000	390,000
Advisory Committee Expenses	17,659	18,143	17,893	14,000	13,000	14,000
External Research Management	-	805	-	-	-	-
Employee Expenditure	-	17,064	-	-	-	-
Communications	7,589	6,338	18,764	40,000	40,000	40,000
Meeting Expenses	*-*	*-*	*-*	*-*	*685*	*-*
Travel and Accommodation	*7,583*	*6,086*	*6,345*	*10,000*	*4,000*	*10,000*
Other Expenses	*493*	*-*	*450*	*-*	*-*	*-*
Consulting Fees	*-*	*-*	*-*	*-*	*5,000*	*-*
Temporary Staff	*-*	*-*	*-*	*-*	*-*	*-*
Couriers	*-*	*-*	*-*	*-*	*-*	*-*
Levy Collection Costs	*-*	*-*	*-*	*-*	*-*	*-*
Other Expenses	8,076	6,086	6,795	10,000	9,685	10,000
Program Management Fees	15,000	18,000	18,000	18,000	18,000	18,000
Total R&D Expenditure	**479,007**	**612,359**	**584,733**	**457,000**	**457,685**	**472,000**
Operating Result	**77,817**	**(68,588)**	**(88,068)**	**(26,000)**	**(54,000)**	**1,000**
Retained surpluses at beginning of period	375,158	452,975	384,387	204,587	296,319	242,319
Retained surpluses at end of period	**452,975**	**384,387**	**296,319**	**178,587**	**242,319**	**243,319**

Pasture Seeds

Research Manager

Ms Annette Sugden
Ph: 02 6271 4138
Fax: 02 6271 4199
Email: annette.sugden@rirdc.gov.au

Objective

To facilitate the growth of a profitable and sustainable pasture seeds industry based on a reputation for reliable supply, domestically and internationally, of a range of pasture species.

Strategic plan and internet accessibility

This Program has its own five-tear R&D plan accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

The program is funded by statutory levies paid by industry participants. This levy revenue is matched on a dollar-for-dollar basis by the Australian Government up to 0.5 per cent of the gross value of farm production.

Total R&D expenditure budget

$350 000

Background

Estimation of the GVP for the pasture seeds industry for 2005–06 and 2006–07 has been delayed by the late release of the ABS Agriculture Census. GVP for the pasture seeds industry for 2003–04 was estimated at $120.5 million (ABS 2005). This includes production not covered by the current levy. In 2006–07, Australia produced approximately 10 000 tonnes of certified pasture seed (69% of all certified seed by OECD, AOSCO and Australian Seed Certification schemes) (ASA 2007). More than half of the pasture seeds produced were lucerne (*Medicago sativa*) seeds.

Leviable pasture seed production is concentrated in South Australia, Victoria and NSW. The majority of pasture seed growers are multi-commodity farmers and do not identify as seed growers in census and survey collections.

Like many other commercial crops across Australia, pasture seed crops have been significantly affected by drought conditions. The current high fodder prices are also impacting on seed production as growers are cutting their crops before seed is set to take advantage of good returns.

The Australian pasture seeds industry is competitive on the world market. In 2005–06, Australia exported 14 400 tonnes of pasture seeds valued at $60.5m, which is comparable to an average of 16 500 tonnes. The export value of certified pasture seeds has been climbing since 2001–02 from $50.3 million to $60.5 million in 2005–06—a growth of approximately 17%. The United States is the biggest importer of Australian pasture seeds, namely lucerne (alfalfa). There are also expanding markets in China, Argentina, Brazil, the United Arab Emirates, Saudi Arabia, China, Korea and Germany.

*More than half of the pasture seeds produced in 2006–07 were lucerne (*Medicago sativa*) seeds*

In 2005–06, Australia imported 7000 tonnes of pasture seeds valued at $16.5 million. Over the past five years, imports have trended upward yet values imported have remained fairly constant. The impact of drought has caused an interim spike in volumes imported. In this period, the major varieties imported have been rye grass, fescue and clover seed. Most imported seeds arrived from New Zealand (4700 tonnes) and the United States (2000 tonnes).

Cropping industries across much of Australia have been significantly affected by drought. While most crop harvests were higher in volume in 2006–07 than the previous year, the harvests are still well below the five-year average production. The pasture seed industry is a small but very valuable part of the cropping sector that is currently in demand due to the impact of drought on the production of viable seed for pasture growers and animal producers.

The risks and costs involved in bringing a whole crop to certifiable stage are great, with many producers opting instead to take ready income from hay production. However, despite the high price of hay in 2006-07, the returns for hay were still far lower than the returns for a seed crop. Some seed produced in 2006–07 was not sold despite its good quality because graziers did not see a good autumn break before sowing or because they weren't satisfied the drought was over. Producers who

did plant have reported much earlier harvests than normal. This change in production may have a flow-on effect in the coming years—for example, it is likely that there will be a diminished volume produced in 2007–08, hence less seed certified, and less exportable.

The industry R&D levy is currently only collected from a small part of the pasture seed industry through government seed certifiers. Efforts to change the regulations governing levy collection activities to include non-government seed certification agencies have to date been unsuccessful. In addition, the Grains Council of Australian and the Australian Seeds Federation and some industry sectors are lobbying to expand the range of leviable seeds covered by levy collection regulations. Changes to the regulations defining the agencies authorised to collect levies and expansion of the species covered by levies will greatly enhance the level of revenue available for pasture seeds research.

Incursions of the honeybee pest varroa mite and other diseases affecting honeybees could severely affect the pasture seeds industry, which is highly reliant on honeybees for pollination. The industry has been proactively supporting research into the development of a leafcutter bee industry as it appears to be unaffected by some of these pests and diseases.

Key long-term strategies

- improving the collection and dissemination of knowledge on the pasture seed industry and support for effective adjustment to change
- improving seed production technologies to maximise yield, quality and processing efficiency
- incorporating environmental considerations in sustainable production systems
- fostering emerging sciences/ technologies and risk assessment
- encouraging the development of new products and markets
- promoting and facilitating improved industry adoption of key pasture seed R&D findings
- supporting emerging research talent through provision of travel grants

Key strategies for 2008–09

- improving seed production technologies to maximise yield, quality and processing efficiency
- incorporating environmental considerations in sustainable production systems
- promoting and facilitating industry adoption of key pasture seed R&D findings
- supporting emerging research talent through provision of travel grants
- fostering emerging sciences/ technologies and risk assessment

Expected key outputs for 2008–09

- definition of the impact of toad rush (*Juncus bufonis*) on subterranean clover seed crops
- participation in the Pastures Australia initiative
- development of improved harvesting and thrashing methods for medic and biserrula pods
- presentation of program outcomes at industry meetings
- development and assessment of leafcutter bee survival, management and reproduction in South Australia
- identification of methods for the management of bacterial wilt of lucerne
- release of three research reports addressing industry-identified research needs

Expected key outcomes for 2008–09

- development of innovative technologies to ensure commercial success of new varieties
- reduced impact of diseases of subterranean clover seed crops
- improved communication of program activities and research outcomes
- reduced duplication of resource use through cooperative efforts with other RDCs
- proactive approaches to the management of lucerne pollination activities and the industry's vulnerability to incursions of pests such as the varroa mite

Key performance indicators

- presentation of research outcomes at one key industry meeting
- improved inter-agency cooperation through attendance at two Pastures Australia meetings and funding of one joint project in 2008–09
- industry adoption of new seed production technologies for new varieties
- reference to new research outcomes in three industry-related journals

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002381	Management of white fringed weevil and similar species in lucerne	James De Barro	08 8755 3400
PRJ-002388	Development and use of diagnostic tools for subterranean clover red leaf disease	Geoff Auricht	08 8303 9498

Pasture Seeds budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	17,000	-	-	-	-
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	130,391	199,050	170,683	160,000	225,000	150,000
External Contributions	143,691	188,692	156,734	-	-	-
Statutory Industry Levies	-	-	-	160,000	139,051	150,000
Interest	*28,494*	*30,581*	*37,190*	*25,000*	*27,000*	*19,000*
Industry Levy Penalties	*52*	*1*	*-*	*250*	*279*	*-*
Royalties	*20,234*	*16,331*	*41,863*	*-*	*2,237*	*10,000*
Project Refunds	*-*	*-*	*-*	*-*	*-*	*-*
Publications	*143*	*119*	*379*	*25,000*	*-*	*-*
All Other Income	*-*	*-*	*15,494*	*-*	*-*	*-*
Other Income	48,923	47,032	94,926	50,250	29,515	29,000
Total Income	**323,005**	**451,774**	**422,343**	**370,250**	**393,566**	**329,000**
R&D Expenditure						
RESEARCH	261,823	323,762	310,080	450,000	450,000	350,000
Advisory Committee Expenses	3,740	11,986	24,595	10,000	20,000	10,000
External Research Management	-	797	-	-	2,150	-
Employee Expenditure	-	17,064	-	-	-	-
Communications	1,421	5,012	7,749	12,000	20,000	12,000
Meeting Expenses	*-*	*-*	*-*	*-*	*100*	*-*
Travel and Accommodation	*40*	*1,070*	*1,116*	*2,500*	*1,600*	*2,500*
Other Expenses	*-*	*-*	*450*	*500*	*1,250*	*500*
Consulting Fees	*-*	*-*	*-*	*-*	*-*	*-*
Temporary Staff	*-*	*-*	*-*	*-*	*-*	*-*
Couriers	*-*	*-*	*-*	*-*	*-*	*-*
Levy Collection Costs	*2,322*	*2,969*	*6,095*	*6,000*	*4,966*	*6,000*
Other Expenses	2,362	4,039	7,661	9,000	7,916	9,000
Program Management Fees	13,800	14,000	14,000	14,000	14,000	14,000
Total R&D Expenditure	**283,146**	**376,660**	**364,085**	**495,000**	**514,066**	**395,000**
Operating Result	**39,859**	**75,114**	**58,258**	**(124,750)**	**(120,500)**	**(66,000)**
Retained surpluses at beginning of period	470,349	510,208	585,322	560,122	643,580	523,080
Retained surpluses at end of period	**510,208**	**585,322**	**643,580**	**435,372**	**523,080**	**457,080**

Deer

Research Manager

Ms Annette Sugden
Ph: 02 6271 4138
Fax: 02 6271 4199
Email: annette.sugden@rirdc.gov.au

Objective

The program objective is to improve industry performance in four key areas where the industry has identified problems at both whole-of-industry and sector-specific levels.

Strategic plan and internet accessibility

This Program has its own five-year R&D plan accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

The program is funded by statutory levies paid by industry participants. This levy revenue is matched on a dollar-for-dollar basis by the Australian Government up to 0.5 per cent of the gross value of farm production.

Total R&D expenditure budget

$200 000

Background

Deer farms are found throughout all Australian states, but production is now concentrated in Victoria, South Australia, New South Wales and Tasmania. Red deer and red deer hybrids have become the predominant species on Australian deer farms because they are have a better production of velvet antler and a larger carcass size, which reduces slaughter and processing costs.

There has been a significant decline in deer production across Australia, but particularly in Queensland and Western Australia. In 1997–98, there were about 190 000 farmed deer, and the national herd increased until the onset of drought in 2002, which saw the decline in the herd size and the total value of the industry. The industry is characterised by a large number of small-scale producers, although there are now many deer farmers with more than 1000 animals.

The number of deer processed during 2006–07 (12 857) was estimated to be about half the number processed during 2005–06 (27 305) and 2004–05 (31 061). The total farm gate value of venison in 2006–07 was $1.24 million compared to $2.47 million in 2005–06. This has been declining since 2001–02 when the value of venison reached $6.32 million. This decline has been influenced by drought and poor returns.

Average venison prices have improved since 2003–04 when prices were $1.81/kg hot carcass weight due to a large number of drought-affected stock being slaughtered.

Deer in velvet

Prices for animals meeting market specifications improved in 2006–07 with processors paying in excess of $2.70/kg hot carcass weight for prime animals.

Prices for velvet antler were similarly depressed in historic terms over the last five years. In 1999 average prices exceeded $100/kg for top grade velvet but fell to around $45/kg in early 2006. In 2006–07, average velvet prices increased to $86.68/kg. This price increase was a reflection of a reduction in New Zealand herds and increased demand, especially in the Korean market.

The number of animals processed annually has also decreased, with a total volume of 461 tonnes in 2006–07 compared to 1012 tonnes in 2005–06 and 1174 tonnes in 2004–05.

Since the industry was established in Australia in the 1970s, it has experienced the cyclical 'boom or bust' phenomena of most export commodity driven industries. The industry has potential for growth but this potential is currently hindered by a commodity trading approach to deer marketing and management.

While broadly based research and development is undoubtedly needed in the industry to maintain industry competitiveness, the industry has also recognised the need to establish market-focused supply chain alliances and has targeted all its funds towards this as a short-term measure to re-define the industry.

Australia is a small player on the international deer market and struggles to be internationally competitive against a much larger deer industry in New Zealand, where deer farming is a mainstream farming industry. The New Zealand industry has the advantage of scale and the capacity to use statutory producer levies for product promotion in both domestic and international markets. Most commodities currently produced by the Australian deer industry are sold in export markets—

with venison sent predominantly to the European Union and South-East Asia, with velvet exported to Korea, Hong Kong and China. This makes the industry particularly vulnerable to international market forces such as international exchange rates, and international import requirements.

The research and development program is funded by venison and velvet levies. The deer industry has been successful in reducing the velvet and venison levies with the following reductions introduced from July 2007 for review after three years:

- the Deer Slaughter Levy reduced from 10.5 cents/kg to 8.0 cents/kg
- the Deer Export Charge reduced from $7.50 to $5 per animal
- the Deer Velvet Levy reduced from 3.5% to 2% sale value
- the Deer Velvet Export Charge reduced from 3.5% to 2% of sale value.

Within the Deer Slaughter Levy (8.0c/kg), the National Residue Service component of the levy used for export testing for residues in carcasses was increased from 1.0c/kg to 4.0c/kg and the research component decreased from 9.5c to 4.0c. This is impacting on the amount of revenue received by the R&D Program and will incur a steep decline in program reserves.

The Australian venison industry is currently in an extended slump, characterised by low returns to producers and a declining number of large-scale deer farms. Of major concern to the industry at present is the fact that whilst venison supplies and production are at historically low levels, prices being received for deer are also low—a situation that indicates the existence of significant demand and supply chain related issues. This is compounded by a downturn in Australian venison export markets. While the Market-Focused Venison Alliances have demonstrated the benefits of supply-chain alliances, considerable development is needed across the industry before it has an impact.

While there is considerable room for productivity enhancement through use of improved technologies in abattoir and processing operations, the comparatively small volumes of deer put through these facilities, and the resulting diseconomies of scale, are not conducive to investment in these areas by facility owners.

Key long-term strategies

- improve understanding of and cooperation between participants in the value chain for venison and velvet products
- improve market demand for venison and velvet products by improving product quality and quality control systems and improving consumer understanding of deer products
- improve market demand for deer products by improving end-user knowledge of the attributes of Australian venison products and developing new value-added venison and velvet products that reflect current and emerging market requirements
- promote utilisation and adoption of research results to improve the uniformity and quality of industry products and the capacity of producers to consistently supply them
- communicate research outcomes and promote their adoption to the deer industry through strong relationships with key industry organisations

Key strategies for 2008–09

- improve market demand for deer products by improving end-user knowledge of the attributes of Australian venison products and developing new value-added venison and velvet products
- promote utilisation and adoption of research outcomes to improve the uniformity and quality of industry products and the capacity of producers to consistently supply them

Expected key outputs for 2008–09

- definition of the efficacy of velvet antler as a natural anti-inflammatory for animals
- development of a database of deer industry practitioners to improve research dissemination and facilitate expansion of the R&D levy
- communication of research results through a newsletter
- release of one new research report

Expected key outcomes for 2008–09

- identification of potential uses for velvet antler in the animal health industry
- understanding of deer program research outcomes through more effective communications

Key performance indicators

- an industry database developed
- resumption of an industry R&D newsletter
- completion of trials to determine effectiveness of antler velvet for medicinal purposes
- a more cohesive industry responsive to R&D outputs

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002343	Establishment of a deer industry database	Solange Shapiro	03 5596 2323
PRJ-002508	Communication and information programs for the Australian deer industry	Solange Shapiro	03 5596 2323

Deer budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	52,000	57,600	52,000	52,000	52,000	-
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	23,928	16,811	12,906	22,500	12,900	25,000
External Contributions	-	-	200,000	100,000	80,000	-
Statutory Industry Levies	170,613	119,160	113,359	60,000	45,000	80,000
Interest	*29,488*	*32,773*	*36,481*	*15,000*	*28,000*	*10,000*
Industry Levy Penalties	*998*	*1,132*	*1,010*	*500*	*493*	*500*
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	*204*	-
Publications	*213*	*263*	*31*	*200*	*181*	-
All Other Income	-	-	-	-	-	-
Other Income	30,699	34,168	37,522	15,700	28,878	10,500
Total Income	**277,240**	**227,739**	**415,787**	**250,200**	**218,778**	**115,500**
R&D Expenditure						
RESEARCH	202,737	152,674	269,964	350,000	350,000	200,000
Advisory Committee Expenses	12,984	18,810	11,656	15,000	5,000	5,000
External Research Management	16,171	19,558	24,752	21,000	-	-
Employee Expenditure	-	5,688	-	-	-	-
Communications	1,165	1,622	3,419	5,000	1,000	5,000
Meeting Expenses	-	-	-	-	*100*	-
Travel and Accommodation	*540*	*3,170*	*912*	*500*	*600*	*500*
Other Expenses	-	-	-	-	*78*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	*16,098*	*15,342*	*14,000*	*14,000*	*9,000*	*14,000*
Other Expenses	16,638	18,512	14,912	14,500	9,778	14,500
Program Management Fees	14,000	14,000	14,700	9,000	9,000	6,000
Total R&D Expenditure	**263,695**	**230,864**	**339,403**	**414,500**	**374,778**	**230,500**
Operating Result	**13,545**	**(3,125)**	**76,384**	**(164,300)**	**(156,000)**	**(115,000)**
Retained surpluses at beginning of period	553,433	566,978	563,853	394,853	640,237	484,237
Retained surpluses at end of period	**566,978**	**563,853**	**640,237**	**230,553**	**484,237**	**369,237**

Organics

Research Manager

Ms Annette Sugden
Ph: 02 6271 4138
Fax: 02 6271 4199
Email : margie.thomson@rirdc.gov.au

Objective

To deliver R&D to facilitate the organic industry's capacity to meet rapidly increasing demand, domestically and globally.

Strategic plan and internet accessibility

This Program has its own five-tear R&D plan accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

This program is funded from RIRDC's core funds provided by the Australian Government. Preference will be given to project applications that are also supported by funds from industry sources.

Total R&D expenditure budget

$340 000

Background

Organic products are produced and consumed in over 130 countries. They represent the fastest growing food sector worldwide. Growth of new farms, products and number of consumers has been steadily increasing over the last 20 years. In the last 10 years the rate of growth has consistently increased in all of the advanced economies. Market analysts forecast annual growth rates between 10% and 30% around the world. The United States Department of Agriculture expects that the organic industry will be worth US$100 billion by 2010 in just three markets—the United States, Europe and Japan. Major food corporations worldwide are developing organic product lines.

Field day for organic growers to inspect seedlings

In Australia, the organic sector is worth between $250–400 million per annum at retail level. Demand is currently outstripping supply. Production in Australia has been increasing at between 6–15% per annum, whereas consumption is growing at between 25–40%. The balance is imported. Australia is one of the world's leading grain exporters, however organic grains are being imported to meet the shortfall in production.

Rising domestic and overseas demand for Australian organic products is prompting a greater number of conventional farmers and processors to consider and adopt organic systems. Typically the attraction is either improved market access and/or higher prices from niche markets, together with recognition by the marketplace of better and more sustainable farming practices. Concern by both consumers and producers of the need for more sustainable farming practices is growing strongly and there is the potential for organic farming systems to play a role in this across agriculture as a whole.

The Organics R&D Program operates through a mixture of commissioned and submitted projects.

A significant advance for Australian organic agriculture in 2007–08 has been recognition of The Organic Federation of Australia (OFA) as the peak body for the industry. In the past, industry fragmentation has meant that it has been difficult for the industry to strategically co-invest in R&D. The OFA's Industry Business and Marketing Plan outlines the future directions of the industry. A key strategy is industry co-investment for R&D, to complement RIRDC investment. However industry co-investment in the new Organics R&D Plan did not eventuate in 2007–08, a prerequisite in the plan for any future increases in RIRDC investment. The Queensland Department of Primary Industries convened a meeting on organics, and is writing a submission to the Primary Industries Standing Committee, which may lead to more federal and state agency support for the industry.

While the current development of an organic domestic standard (through Standards Australia) potentially provides the impetus for enhanced industry cohesion, the industry is currently operating in a divisive political environment. It is at a critical and fragile phase of its development. The entry of new large corporate stakeholders to the industry also has

potential to have a positive impact on the unity of the industry.

Key long-term strategies

Use R&D to resolve key knowledge gaps in the following areas to:

- improve organic farming system performance by increasing productivity and improving product quality and consistency of supply. Priorities will be to increase knowledge of the role of soil in organic production systems and to improve the methods for protection of plants and animals against pests and diseases in organic production systems
- address supply chain constraints, including the development of robust supply chains for organic products, technical barriers to market access and food safety risk management
- validate organic farming system performance
- focus on grains, horticulture, meat and dairy as priority sectors over the course of the RIRDC R&D Plan for the Australian Organic Industry 2006–2011 with consideration of other sectors on a case-by-case basis.

Key adoption issues will be addressed through the Australian Organic Knowledge Hub, which will:

- map and screen conventional farming system knowledge for potential application within the organic industry
- collect and manage scientific knowledge and translate it into user-friendly packages and tools for the organic industry
- communicate the scientific case for organics.
- facilitate the adoption of organic best practice.

Key strategies for 2008–09

- implement the Organic Knowledge Hub
- implement organic sector research plans for the grains, dairy, horticulture and meat sectors
- adapt research outcomes from conventional agriculture to organic farms

Expected key outputs for 2008–09

- finalisation of work on the Organic Knowledge Hub
- a pest and disease report on using pyrethrum with tropical fruit production
- two soils R&D projects, one on sustaining biological function, the other on available phosphorus for organic farming systems
- a technical manual for converting to organic citrus production

Expected key outcomes for 2008–09

- improved access to information on organics through the new Hub
- improved availability and uptake of conversion information for farmers
- program to make significant steps in attracting co-investment into the program
- decision made on ongoing RIRDC support for the Organics Program based on the current investment model

Key performance indicators

- extension packages developed for organic industry based on conventional and/or organic agriculture
- number of proceedings of RIRDC organic workshops published
- co-investment secured for a program of research aimed at managing soil phosphorus
- co-investment secured to establish the relative sustainability of alternative approach

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
*PRJ-002981	Improving soil fertility and productivity of organic farms—tailored compost	Eric Love	02 9922 3456
*PRJ-002998	A model for an education program to support conversion	Craig Davey	03 5623 6622
*PRJ-003000	Feasibility study for essential amino acids alternatives in organic chickens	TBA	

** still to be finalised.*

Organics budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	240,056	353,493	295,296	338,750	318,750	310,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	-	80,000	-	80,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	*723*	*818*	*1,818*	-	*2,036*	-
All Other Income	-	-	-	-	-	-
Other Income	723	818	1,818	-	2,036	-
Total Income	**240,779**	**354,311**	**297,114**	**418,750**	**320,786**	**390,000**
R&D Expenditure						
RESEARCH	184,986	262,047	245,285	360,000	222,834	340,000
Advisory Committee Expenses	18,529	20,357	16,436	20,000	20,000	20,000
External Research Management	33,314	33,620	12,558	18,750	30,000	-
Employee Expenditure	-	-	-	-	-	-
Communications	1,686	31,999	19,399	15,000	19,000	28,000
Meeting Expenses	-	-	-	-	*25,000*	-
Travel and Accommodation	*1,481*	*6,288*	*3,335*	*5,000*	*1,951*	*2,000*
Other Expenses	*783*	-	*101*	-	*2,000*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	2,264	6,288	3,436	5,000	28,952	2,000
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**240,779**	**354,311**	**297,114**	**418,750**	**320,786**	**390,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**0**
Retained surpluses at beginning of period	-	-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**0**

Portfolio Three—National Rural Issues

General Manager

Dr Tom Davison
Ph: 02 6271 4140
Fax: 02 6271 4199
Email: tom.davison@rirdc.gov.au

Portfolio goal

To provide the knowledge to address national rural issues.

Portfolio strategy

Invest in R&D to support:

- rural policy priorities of government
- the priorities of rural industries and communities
- topics that are cross-sectoral, or multi-industry.

Portfolio success measures

We will know we are successful when:

- sector five-year R&D plans are meeting objectives to provide the knowledge to address national rural issues
- we generate knowledge to meet the needs of industry, community and government to address national rural issues
- we can demonstrate a high level of support from partners through regular stakeholder surveys and continuing co-investment
- RIRDC's investments lead to the adoption of knowledge to address national rural issues, demonstrated by client surveys and program evaluation.

Overview

Background

The National Rural Issues Portfolio invests in R&D to deliver solutions to cross-cutting issues affecting rural and regional Australia. The National Rural Issues Portfolio was formed in July 2005 from the amalgamation of two former portfolios—Sustainable Industries and Capacity Building and Competitiveness—resulting in an investment portfolio covering themes ranging from agroforestry, organics and global competitiveness, to food integrity and farm health and safety.

During 2007–08 the National Rural Issues Portfolio began a process of aligning more closely with stakeholders needs. Two programs—Environment and Farm Management, and Rangelands and Wildlife—are being closed so that funds can be used for exploration in priority areas, including climate change and variability, global competitiveness and our role in adoption, leadership and regional renewal and Indigenous rural development.

In 2008–09 a formal process will be implemented that identifies future investment priorities for the National Rural Issues Portfolio. This involves engaging portfolio stakeholders and identifying their R&D priorities through an annual National Rural Issues Conference. This will involve high-level participation from eminent speakers, government and industry to both identify and secure commitment to agreed priorities.

Challenges and opportunities

There will be a combination of old and new pressures shaping the economic, environmental and social fabric of rural and regional communities. Recent trends include:

- the intersection between food production, biofuel, competition for energy sources, global warming and government policy changes on emissions, which has created a completely new environment for agriculture
- the expanded potential market for carbon credits and the role of agriculture in this
- increasing food prices as demand outstrips supply
- increasing international competition from low-cost commodities
- the escalating price of high-quality agricultural land with water
- the emergence of non-tariff exemptions (environment, animal welfare and consumer concern) in Doha trade negotiations
- bilateral trade agreements in

negotiation between Australia and China, Japan and South Korea—with similar negotiations with our competitors
- increasing demand for high protein food that will increase demand for grains and processed foods
- government agendas in innovation, climate change, greenhouse gas emission targets and Indigenous people.

Potential opportunities will arise as new funding initiatives are developed and announced through the Government's Plan for Primary Industries. Some of the Government's proposals to help Australian farmers are Australia's Farming Future, as well as plans for climate change and farming; helping farmers to protect the Great Barrier Reef through Reef Rescue; and establishment of a National Rural Women's Network. The portfolio will scope opportunities to contribute to Indigenous community employment and development through Indigenous land use. The portfolio will also celebrate ten years of the RIRDC Rural Women's Award in 2008–09.

Key R&D issues for 2008–09

- grow relevant and high investment return programs like the Global Competitiveness and the Collaborative Partnership for Farming and Fishing Health and Safety Programs
- maintain similar levels of funding for programs such as Food Integrity and Biosecurity, with a decision on future investment in 2008–09 dependent on internal developments
- reduce funding in the Environment and Farm Management, and the Rangelands and Wildlife Systems programs that will continue to wind down in 2008–09
- scope new areas, including government priorities of climate change, carbon emissions trading, environmental impact of agriculture including farm to catchment impacts, regional leadership, adoption and community resilience

Major deliverables for 2008–09

- **a focused National Rural Issues Portfolio**—develop government and industry stakeholder engagement on key strategic areas with increased co-investment from partners
- **emerging rural issues identified and scoped for our industry and government stakeholders**—instigate and develop a new foresighting program called the Emerging Rural Issues Program
- **innovation to address national rural issues**—develop a plan for new investment in the Climate Change and Variability Program
- **development of R&D opportunities in carbon sequestration**—review the Agroforestry and Farm Forestry Program in the context of climate change and emissions trading
- **targeted, stakeholder-driven R&D**—develop new five-year plans for the Global Competitiveness and the Rural Leadership Programs
- **leveraged R&D investment in priority areas**—increase co-investment in the Collaborative Partnership for Farming and Fishing Health and Safety.

Agroforestry and Farm Forestry

Research Manager

Dr Lisa Robins
Email: robins.consulting@bigpond.com
Mr Bruce Munday
Email: bruce@clearconnections.com.au

Objective

To provide knowledge to underpin profitable, sustainable and resilient agroforestry within Australian farming systems and landscapes.

Strategic plan and internet accessibility

The Joint Venture Agroforestry Program (JVAP) Five-Year R&D Plan is accessible in hard copy and at http://www.rirdc.gov.au

Sources of funds

This Program comprises the Joint Venture Agroforestry Program (JVAP) whose core partners are RIRDC, Land & Water Australia (L&WA), and Forest and Wood Products Australia (FWPA). Funding is also provided for some activities by, the Australian Government Department of Agriculture, Fisheries and Forestry, the Murray–Darling Basin Commission, and the Department of Environment and Heritage Australian Greenhouse Office.

Total R&D expenditure budget

$780 000

Background

The JVAP, a partnership since 1993, assists the development of profitable agroforestry industries while delivering beneficial natural resource management outcomes. Agroforestry, or farm forestry, is about integrating trees and woody perennials into existing agriculture for multiple benefits, generally as mixed farming enterprises. Catchment managers can also use farm forestry to achieve revegetation targets. Farm forestry provides six main products and services: wood and fibre, eucalyptus oil and oil products, other extractives, energy, carbon sequestration and environmental services, and food and fodder.

Biomass chipper

Farm forestry includes both planted and native forests, and contributes an estimated $362 million GVP. Predominantly over the past twelve years, 155 290 hectares of farm forests (9% of Australia's plantations), and 400 000–500 000 hectares of woody shrubs have been planted for tree products, fodder and more drought-resilient agricultural systems. In addition there are 38 million hectares of private native forests harvested periodically for commercial returns. Native forests represent $649.3 million GVP at mill gate, of which private farm native forestry remains a significant contributor (e.g. 45% in some regions).

R&D can provide benefits through improving genetic material suited to the land resource available, demonstrating commercial farming systems (despite long crop cycles), analysing infrastructure, harvesting and marketing needs, and addressing impediments to landholder adoption and creation of regional scales of resource. The JVAP Research and Development Plan 2004–2009 addresses these challenges via research on products, product-market linkages, and agricultural systems design at the paddock, farm and landscape scale.

Key issues that have emerged are climate change, carbon trading, water reform, long-term drought, and increased recognition of the need for forest and land stewardship. These will have an increasing effect on farming, livelihoods and regional natural resource management. A national shortfall in wood products, particularly hardwoods, also remains a trade issue. Woody perennials can play a key role in carbon mitigation and adaptation and achieving more carbon-neutral farms and landscapes, while also delivering biodiversity and economic benefits.

JVAP has funded a broad range of research, including farm forestry design, species-site evaluation, biodiversity, managing dryland salinity, product testing and market evaluation. Other recent research includes institutional needs for catchment groups to trade in carbon, and screening for new tree-based products such as secondary chemicals from cineole. In 2008–09, the JVAP program will focus on publication, synthesis and communication of research

results from its 15-year history, and undertake a formal review of the program, including to scope R&D needs for emerging carbon and ecosystem service markets.

Key long-term strategies

- improved agroforestry designs to optimise social, economic and environmental factors at the paddock, farm and regional-landscape scale
- new commercial products and value-added existing products, to promote profitable agroforestry industries
- improved product-market linkages through analysing product suitability, value and regional development options
- demonstrated mechanisms for valuation and trading of ecosystems services provided by agroforestry
- new policy and institutional arrangements that stimulate agroforestry investment

Key strategies for 2008–09

- evaluation of woody native species for new farming systems for southern Australia, including use as fodder, biomass and carbon
- improvement of direct seeding techniques and reliability for broad-scale revegetation
- synthesis of JVAP research and communication to landholders, regional natural resource management groups and government
- mallee biomass data incorporated into the Farm Forestry Toolbox
- evaluation of the germination and field sowing requirements of key direct-seeded species
- workshops and easy-to-use research summaries on key farm forestry and agroforestry topics

Expected key outputs for 2008–09

- updated guidelines on improving biodiversity in farm forests and shelterbelts
- evaluation of the profitability of using shrubs as part of mixed grazing systems

Expected key outcomes for 2008–09

- a major review of the JVAP Program 2003–08
- a new five-year plan to be developed for 2009–14
- increased awareness by regional and catchment management groups, industry and government of the role and value of farm forestry and woody shrub farming systems

Key performance indicators

- stakeholder involvement in identifying and communicating key research results
- stakeholder commitment to a new five-year investment plan for farm forestry R&D
- development of a communication plan for JVAP for 2008–09
- increased understanding of the research and adoption needs for achieving carbon-neutral farming using perennials (mitigation and adaptation), while managing water and biodiversity trade-offs

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-000915	The bio-economic potential for agroforestry in northern cattle grazing systems	Mick Stephens	07 4923 8177
PRJ-002688	A revised private native forestry metric to assess forest structural change	Ross Peacock	0428 651 440
PRJ-002671*	Improving economics of small-scale farm forestry processing for grower groups	Andrew Lang	03 5596 2164
TBA*	The role and value of private native forests	TBA	TBA
TBA*	Research highlights from the Joint Venture Agroforestry Program – fifteen years on	TBA	TBA
TBA*	JVAP program review and scoping new opportunities	TBA	TBA

** still to be finalised*

Agroforestry and Farm Forestry budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	975,000	800,000	425,000	450,000	450,000	450,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	662,500	587,302	845,083	750,000	787,705	550,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	*17,029*	*53,760*	*62,482*	*30,000*	*47,500*	*30,000*
Industry Levy Penalties	*-*	*-*	*-*	*-*	*-*	*-*
Royalties	*19*	*-*	*8*	*-*	*-*	*-*
Project Refunds	*62*	*3,408*	*-*	*-*	*2,495*	*-*
Publications	*27,199*	*12,944*	*8,585*	*16,000*	*7,000*	*10,000*
All Other Income	*-*	*-*	*-*	*-*	*-*	*-*
Other Income	44,309	70,112	71,075	46,000	56,995	40,000
Total Income	**1,681,809**	**1,457,414**	**1,341,158**	**1,246,000**	**1,294,699**	**1,040,000**
R&D Expenditure						
RESEARCH	1,218,863	1,634,372	987,884	890,940	865,940	780,000
Advisory Committee Expenses	13,212	5,606	12,659	13,500	10,000	10,000
External Research Management	-	2,019	954	-	115,000	115,000
Employee Expenditure	-	-	-	-	-	-
Communications	37,736	16,974	23,812	120,000	75,060	100,000
Meeting Expenses	*-*	*-*	*-*	*-*	*3,500*	*-*
Travel and Accommodation	*16,338*	*11,201*	*9,744*	*20,000*	*10,000*	*10,000*
Other Expenses	*2,989*	*10,013*	*5,750*	*10,000*	*500*	*10,000*
Consulting Fees	*-*	*-*	*-*	*-*	*60,000*	*-*
Temporary Staff	*-*	*-*	*-*	*-*	*-*	*-*
Couriers	*-*	*-*	*-*	*-*	*-*	*-*
Levy Collection Costs	*-*	*-*	*-*	*-*	*-*	*-*
Other Expenses	19,327	21,214	15,494	30,000	73,999	20,000
Program Management Fees	125,000	140,000	261,000	200,000	200,000	200,000
Total R&D Expenditure	**1,414,138**	**1,820,185**	**1,301,803**	**1,254,440**	**1,339,999**	**1,225,000**
Operating Result	**267,671**	**(362,771)**	**39,355**	**(8,440)**	**(45,300)**	**(185,000)**
Retained surpluses at beginning of period	377,810	645,481	282,710	8,440	322,065	276,765
Retained surpluses at end of period	**645,481**	**282,710**	**322,065**	**-**	**276,765**	**91,765**

Environment and Farm Management

Research Manager

Dr George Wilson
Ph: 02 6281 2160
Fax: 02 6285 1195
Email: georgewilson@awt.com.au

Objective

To foster agri-industry systems that have sufficient diversity, flexibility and robustness to be resilient and respond to challenges and opportunities

Strategic plan and internet accessibility

This Program has information at http://www.rirdc.gov.au

Sources of funds

This Program is funded from RIRDC core funds provided by the Australian Government. However, as this program is being closed no new investment is planned for 2008–09, but existing contractual obligations are being met.

Total R&D expenditure budget

$235 000

Background

The Environment and Farm Management Program (EFM) and the Rangelands and Wildlife Systems Program (RWS) were formed in 2004 from the former Resilient Agricultural Systems Program (RAS). Neither program has had a five-year research and development plan. RAS historically sponsored research and development into ways that farm-based agribusiness systems can be made both sustainable and more profitable. The EFM also supported innovative commercial opportunities, particularly those involving the conversion of liabilities into assets. It focused on issues that cross a number of sectors. In recent years, EFM focused on environmental management systems (EMS) and frontier technologies.

The EFM Program sponsored R&D into ways that farm-based agribusiness systems can be made both sustainable and more profitable

Key long-term strategies

- focus on practical solutions to environment and farm management problems that cross industry sectors
- support innovative production and frontier technologies that can be incorporated into farm systems
- improve the scope for multiple resource use and reductions in resource waste
- identify and encourage environmental management that meets market demand

Key strategies for 2008–09

- no new work contracted
- meeting current commitments, including the following areas:
  - improving linkages and coordination between EMS activities and other areas that are crucially relevant to food and fibre production
  - assisting land managers understand and use geographic information systems (GIS) and computer-based farm management services particularly through high-speed data providers
  - supporting innovation and the use of frontier technologies that are applicable across industry sectors and improve the efficiency of food, fibre and bioenergy production

Expected key outputs for 2008–09

- development of prototype drying systems applicable to a number of agricultural products such as peanuts and sorghum utilising solar energy with auxiliary electricity for air blowing and desiccant circulation. Partnership with Agridry <www.agridry.com.au> has considerable commercialisation potential
- assessment of the benefits on carbon sequestration of destocking pastoral lands and capacity to market the carbon credits
- analysis of the merits of large-scale establishment of plantations in the upper Macquarie catchment. Consideration of the likelihood of large-scale forestry expansion in the absence of strong external incentives, the benefits of the environmental service of salinity amelioration, the option of regulation to limit plantations, the high costs faced by upstream land owners for tree establishment and opportunity costs of forgoing profitable present land uses
- a review of property management planning software and accreditation processes that enable easy visualisation of complex data management and attainment of standards

Expected key outcomes for 2008–09

- better understanding of needs of Indigenous communities and how mixed agricultural business opportunities can be managed to meet future needs and

address significant shortcomings. Government programs tend to focus on one kind of issue—for example, environment, business development or training—rather than processes that support integrated development
- use of demonstration facility for fish production in on-farm water shortages, and management strategies to buffer water storages from exposure to agricultural chemicals

Key performance indicators

- market demand for the adoption of EMSs and subsequent implementation on farms as a management tool
- adoption of practical solutions across industry sectors that address environment and farm management problems affecting sustainability
- incorporation into farm systems of innovative and productive frontier technologies

Environment and Farm Management budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	674,486	639,164	636,492	472,250	439,250	268,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	33,458	-	-	-	-	-
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	*106*	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	*4,828*	*3,066*	*1,721*	-	*800*	-
All Other Income	-	-	-	-	-	-
Other Income	4,828	3,066	1,827	-	800	-
Total Income	**712,772**	**642,230**	**638,319**	**472,250**	**440,050**	**268,000**
R&D Expenditure						
RESEARCH	663,912	594,312	590,883	420,000	395,000	235,000
Advisory Committee Expenses	3,749	4,788	3,297	3,500	-	3,000
External Research Management	26,054	30,646	32,890	27,750	35,000	20,000
Employee Expenditure	-	-	-	-	-	-
Communications	19,043	12,429	11,249	20,000	10,000	10,000
Meeting Expenses	-	-	-	-	-	-
Travel and Accommodation	-	*55*	-	*1,000*	*50*	-
Other Expenses	*14*	-	-	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	14	55	-	1,000	50	-
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**712,772**	**642,230**	**638,319**	**472,250**	**440,050**	**268,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**0**
Retained surpluses at beginning of period	-	-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**0**

Rangelands and Wildlife Systems

Research Manager

Dr George Wilson
Ph: 02 6281 2160
Fax: 02 6285 1195
Email: georgewilson@awt.com.au

Objective

To facilitate a more diverse rural sector, enhanced biodiversity and innovative industries based on non-traditional uses of the rangelands and their wildlife.

Strategic plan and internet accessibility

This Program has information at http://www.rirdc.gov.au

Sources of funds

This Program is funded from RIRDC core funds provided by the Australian Government. However, as this program is being closed no new investment is planned for 2008–09, but existing contractual obligations are being met.

Total R&D expenditure budget

$170 000

Background

The Rangelands and Wildlife Systems Program (RWS) and the Environment and Farm Management Program (EFM) were formed in 2004 from the former Resilient Agricultural Systems Program (RAS). RAS historically sponsored research and development into ways that farm-based agribusiness systems can be made both sustainable and more profitable. The focus in the RWS Program has been on rangelands, including Sustainable Wildlife Enterprises (SWE) trials that have been supported by the National Landcare Program from 2004 to 2008. The trails give effect to the recommendations of the 1998 Report of the Senate Rural and Regional Affairs and Transport References Committee into the Commercial Utilisation of Native Australian Wildlife. The recommendations were based on overseas experience with native animals similar to kangaroos and indicate that alternative management regimes can enable landholders to integrate wildlife and pastoral enterprises leading to win/win outcomes.

At trial sites in western NSW, Queensland and the Northern Territory, nature-based tourism and commercial utilisation of native plants and animals are being used to determine whether assigning a value to these resources can provide an incentive for landholders to protect and restore wildlife habitat, landscapes and biodiversity, and therefore bring about positive changes in landscape health and agriculture.

Grey kangaroos

Key long-term strategies

- identify ways of maintaining profitability or rangelands use while assuring that production techniques are sustainable and environmentally friendly
- trial non-traditional enterprises such as commercial utilisation of free-ranging wildlife animals, plants and wildlife-based tourism as agents of biodiversity conservation and landscape rehabilitation

Key strategies for 2008–09

- no new work contracted
- meeting current commitments, including for RIRDC-funded Sustainable Wildlife Enterprises trial north of Broken Hill

Expected key outputs for 2008–09

- finalisation of the SWE trial funded by RIRDC (not the National Landcare Program) in the barrier ranges
- conclusion of the study into the potential use of Tammar wallabies on Kangaroo Island as a sustainable resource
- assessment of the potential for multiple use of land that integrates tourism and agricultural production on the Bullo River in the Northern Territory
- development of models that enable the optimised utilisation of wildlife and domestic livestock in Queensland

Expected key outcomes for 2008–09

- finalisation of the RIRDC contribution to the Sustainable Wildlife Enterprises Trials and growing appreciation of the productive potential and economic value of wild resources in the Wildlife Management Conservancies (WMCs)
- landholders sharing proceeds of harvested wildlife through a new framework
- enhanced capacity of land

managers to effectively and efficiently plan, monitor and integrate natural resources management plans
- strategic partnerships established with existing wildlife resource industries, government support programs and philanthropic conservation organisations to underpin the WMCs

Key performance indicators

- WMCs considered an effective organisational structure that facilitates regional collaboration in natural resource management and wildlife planning

Rangeland and Wildlife Systems budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	281,738	408,136	442,341	342,250	179,850	185,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	118,000	92,000	83,400	110,000	176,600	-
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	*25,054*	-
Publications	*2,043*	*837*	*616*	-	*191*	-
All Other Income	-	-	-	-	-	-
Other Income	2,043	837	616	-	25,245	-
Total Income	**401,781**	**500,973**	**526,357**	**452,250**	**381,695**	**185,000**
R&D Expenditure						
RESEARCH	364,014	476,525	481,044	410,000	344,000	170,000
Advisory Committee Expenses	3,076	4,423	2,238	3,500	-	-
External Research Management	31,026	16,512	37,856	27,750	27,500	10,000
Employee Expenditure	-	-	-	-	-	-
Communications	3,652	3,458	5,200	10,000	9,995	5,000
Meeting Expenses	-	-	-	-	-	-
Travel and Accommodation	-	*55*	*19*	*1,000*	-	-
Other Expenses	*13*	-	-	-	*200*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	13	55	19	1,000	200	-
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**401,781**	**500,973**	**526,357**	**452,250**	**381,695**	**185,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**(0)**
Retained surpluses at beginning of period		-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**(0)**

Global Competitiveness

Research Manager

Mr Simon Winter
Ph: 0419 720 700
Email: simonwinter@bigpond.com

Objective

The Global Competitiveness Program aims to identify the impediments to the development of a globally competitive Australian agricultural sector and supports research investments on options and strategies for removing these impediments.

Strategic plan and internet accessibility

This Program has information at http://www.rirdc.gov.au

Sources of funds

This Program is funded from RIRDC core funds provided by the Australian Government. Preference will be given to project applications that are also supported by funds from industry sources.

Total R&D expenditure budget

$634 000

Background

Australia exports approximately two-thirds of its agricultural production by value. Our competitiveness in global markets is therefore vital to the future success of the rural sector and to the livelihood of all Australians.

However Australian farmers face many impediments to their exports. Global markets for many agricultural products are distorted by protectionist policies, especially in the European Union, Japan and the United States. Average tariffs applying to agricultural commodities are more than three times those for non-agricultural goods, and some individual tariffs are as high as 800 per cent. There is also growing competition in export markets as other low-cost producers such as Brazil and China expand their agricultural output.

The Uruguay Round of multilateral trade negotiations led to some important gains in reforming world agriculture. Progress in the World Trade Organization (WTO) remains slow, however, major agricultural subsidisers continue to be driven by protectionist interests in their farm sectors. Further agricultural reform is central to the current Doha round of multilateral trade negotiations that commenced in 2001. Australia's negotiating strategy has been to form a strategic alliance with like-minded countries through the Cairns Group and has been influential in both the Uruguay and Doha rounds.

Another important feature of the international trading environment is the proliferation of bilateral and regional trade agreements. The World Bank estimates that these free trade agreements (FTAs) now cover one-third of global trade. Such agreements may not always be beneficial because they are by definition preferential, but they are increasingly being resorted to because of the slow pace of liberalisation through the WTO, the fear of being left behind by other countries entering FTAs and a reduced commitment to the principles of free trade.

Australia exports approximately two-thirds of its agricultural production by value. Our competitiveness in global markets is therefore vital to the future success of the rural sector and to the livelihood of all Australians

Key long-term strategies

- support analyses identifying new opportunities in the marketplace
- develop a research program supporting the development of a more globally focused competitive food sector
- support analyses focusing on domestic impediments to industry performance, thereby enhancing export performance and an export culture, particularly in those industries that have previously been focusing domestically
- develop options and strategies improving global competitiveness of the agricultural sector by improving the current set of trade policies and therefore removing existing trade barriers
- develop a better understanding of domestic and international markets for agricultural products when there is a clearly established market failure in the provision of such information
- support analyses of the linkages between various stages in the producer to consumer chain and identify areas—regionally, domestically and internationally—where these linkages can be better integrated and their efficiency improved
- challenge existing policies and

institutions that impact on the development of a globally competitive agriculture sector

Key strategies for 2008–09

- implementation of the new Global Competitiveness Five-Year Plan
- production of discussion papers on new and emerging issues relating to global competitiveness
- continue to address areas of common interest to all agricultural sectors by seeking cross-RDC support for trade-related projects
- continued support for current projects addressing specific issues, which include analysis of:
  - trade liberalisation and barriers to trade
  - trade policy
  - specific markets, goods and services

Expected key outputs for 2008–09

- an international overview and trend analysis of ethical foods
- identification of opportunities for small and medium enterprises to enhance operations and customer service through the application of internet technologies
- application across agricultural commodity sectors of an agreed methodology for life cycle analysis and the development of a shared repository for data produced by these analyses
- dissemination of three discussion papers providing alternative views or addressing issues that are not currently on stakeholders' agendas
- continued support for the Australian Agricultural and Resource Economics Society Conference

Expected key outcomes for 2008–09

- key outcomes expected during 2008–09 will include an increased understanding of:
  - global trade issues, particularly in relation to trade liberalisation and non-tariff trade barriers
  - the role and incorporation of agricultural energy and water use with regard to trade
  - specific trade requirements of particular markets of interest, such as China
  - the implications of the changing world demand for protein
  - the use of industry adjustment schemes to bring about meaningful change

Key performance indicators

- recognised contribution to maintenance and improvement in agricultural exports both in existing and new markets
- change in policies relating to the global competitiveness of Australian agricultural commodities
- utilisation of program outputs by stakeholders, including government departments

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
*PRJ-002384	Viability of alternative frameworks for agricultural trade negotiations	Andrew Stoler	08 8303 6944

** still to be finalised*

Global Competitiveness budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	697,469	378,766	558,392	471,000	450,000	500,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	12,200	-	-	78,000	200,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	*6,402*	-
Publications	*1,393*	*472*	*99*	-	*135*	-
All Other Income	-	-	-	-	-	-
Other Income	1,393	472	99	-	6,538	-
Total Income	**698,862**	**391,438**	**558,491**	**471,000**	**534,538**	**700,000**
R&D Expenditure						
RESEARCH	655,617	359,524	550,258	450,000	471,500	634,000
Advisory Committee Expenses	1,826	1,904	3,548	5,000	6,300	5,000
External Research Management	-	1,152	3,086	-	32,000	50,000
Employee Expenditure	32,265	3,613	-	-	-	-
Communications	6,743	24,347	635	15,000	15,282	10,000
Meeting Expenses	-	-	-	-	*150*	-
Travel and Accommodation	*2,314*	*859*	*634*	*1,000*	*1,500*	*1,000*
Other Expenses	*97*	*39*	*330*	-	*1,700*	-
Consulting Fees	-	-	-	-	*6,106*	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	2,411	898	964	1,000	9,455	1,000
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**698,862**	**391,438**	**558,491**	**471,000**	**534,538**	**700,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**(0)**
Retained surpluses at beginning of period		-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**(0)**

Food Integrity and Biosecurity

Research Manager

Ms Jane Fisher
Ph: 02 6271 4149
Fax: 02 6271 4199
Email: jane.fisher@rirdc.gov.au

Objective

The Food Integrity and Biosecurity Program aims to deliver research and development to enable Australia to maintain its ability to deal with the threats that pest, disease and bio-terrorism pose to food, to crops, to livestock and to enable access to national and international markets.

Strategic plan and internet accessibility

This Program has information at http://www.rirdc.gov.au

Sources of funds

This Program is funded from RIRDC core funds provided by the Australian Government. The Program has attracted co-investment from a number of sources, including the Department of the Prime Minister and Cabinet. Collaborative investment from other RDCs is being explored.

Total R&D expenditure budget

$149 000

Background

There are many players on the food integrity and biosecurity stage, however, the Food Integrity and Biosecurity Five-Year Plan has identified that there is a clear niche for RIRDC's program in the area of new and emerging industries, and peri-urban agriculture. A number of serious, exotic pests have been identified in Australia in the last five years that threaten both Australia's agricultural industries (e.g. cane smut and citrus canker) and biodiversity (e.g. fire ants). There are many more potential pests and diseases that threaten our shores and that may become pests in the future. The Food Integrity and Biosecurity Program will contribute to developing general surveillance strategies, and to countering issues specific to RIRDC industries, and to peri-urban agriculture.

Key long-term strategies

The research objectives of the program are to:

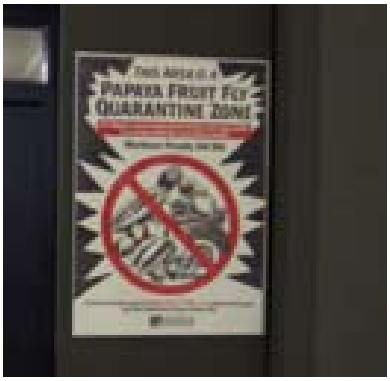
- enable Australian agricultural industries to optimise investment in surveillance for biosecurity and food integrity on and off farm
- address the risks posed to agricultural industries and human health from peri-urban production, regional production and alternative distribution networks
- develop biosecurity and food integrity management tools for RIRDC industries
- assist RIRDC industries to meet national and international market demands by improving their ability to track and trace their products
- to enable the extension and communication of research

Key strategies for 2008–09

- assess the risk posed to industry and human health by peri-urban producers and alternative distribution systems (such as farmers' markets)
- develop a framework for or a generic approach to codes of practice for on-farm biosecurity and food integrity that promotes step-wise improvement
- scope the likely future market demands for track and trace and communicate to small industries on their need to address these issues in their industry. Develop/identify and adapt technologies to support track and trace systems that will be effective in small industries

Expected key outputs for 2008–09

- assessment of the threat that rice blast poses to the Australian rice industry completed
- development of techniques of infrared and raman microspectroscopic analysis of food, enabling rapid analysis of large quantities of food for foreign matter, an invaluable tool in the event of bio-terrorism
- publication of the research report on *Assessment and Communication of Risk in Agricultural Quarantine Issues*



There are many potential pests and diseases that threaten our industries

Expected key outcomes for 2008–09

- understanding by rice industry of the threat that rice blast poses
- early detection of potential biohazards enabled through better understanding of the value of infrared and raman microspectroscopy in rapid analysis in assessing foreign matter in food
- useful information to inform enhanced policy development resulting from assessment and communication of risk in agricultural quarantine issues

Key performance indicators

- publication of material suitable for policy makers at federal and state agencies about *Assessment and Communication of Risk in Agricultural Quarantine Issues*
- increased level of knowledge on ways to improve food integrity and biosecurity
- increased awareness of food integrity issues among agricultural industry and other stakeholders

Food Integrity and Biosecurity budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	132,123	277,871	268,411	271,000	192,500	150,000
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	132,832	122,292	122,292	-
RIRDC Salary Contribution	-	-	-	-	-	-
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	-	-	-	-	-	-
All Other Income	-	-	-	-	-	-
Other Income	-	-	-	-	-	-
Total Income	**132,123**	**277,871**	**401,243**	**393,292**	**314,792**	**150,000**
R&D Expenditure						
RESEARCH	131,313	268,235	399,914	387,292	312,500	149,000
Advisory Committee Expenses	298	602	278	500	1,500	1,000
External Research Management	-	9	291	-	-	-
Employee Expenditure	-	6,799	-	-	-	-
Communications	512	61	858	2,500	700	-
Meeting Expenses	-	-	-	-	-	-
Travel and Accommodation	-	*2,165*	*(124)*	*3,000*	*92*	-
Other Expenses	-	-	*26*	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	-	2,165	(98)	3,000	92	-
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**132,123**	**277,871**	**401,243**	**393,292**	**314,792**	**150,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**(0)**
Retained surpluses at beginning of period		-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**(0)**

Rural People and Learning Systems

Research Manager

Ms Jane Fisher
Ph: 02 6271 4149
Fax: 02 6271 4199
Email: jane.fisher@rirdc.gov.au

Objective

To improve productivity, environmental sustainability, and wellbeing in rural and regional Australia through R&D that contributes to building stronger and innovative institutions, communities, group activities and personal capacities.

Strategic plan and internet accessibility

A one-year plan has Board approval and a new direction and review for the Program will be set in 2008–09.

Sources of funds

Eighty per cent of the Rural People and Learning Systems budget comes from RIRDC Core funds, with 17% from external contributions.

Total R&D expenditure budget

$473 000

Background

The people—or human capital—engaged in rural industries drive innovation and change, leading to improved productivity and sustainability. Many agencies, both government and agribusiness, aim to build human capital by providing knowledge and skills to utilise new production systems and technologies.

Research and development to improve the educative and delivery processes that underpin these services will enhance this human capital. Human capital also rests on the physical and mental health of people within a community as well as their ability to contribute to the community's wellbeing.

Enhanced learning systems enable farm managers to access the knowledge and skills required for innovation and change. There is recognition that learning systems to enhance adoption and implementation of research require ongoing development, including new thinking about ways of interacting with client groups, and testing of new technologies related to internet applications for their application to rural life. This research is important for maintaining viable industries and communities in rural Australia.

The people—or human capital—engaged in rural industries drive innovation and change, leading to improved productivity and sustainability

Key long-term strategies

To facilitate high-quality R&D in order to:

- explore change processes in the rural social landscape and the interactions between the groups and issues involved
- improve understanding of the elements of human and social capital contributing innovative, strong and resilient people
- optimise the use of formal and informal learning systems and facilitate adoption of improved practices

Key strategies for 2008–09

- support scoping studies that place agricultural industries in a regional context by identifying non-agricultural and regional infrastructure activities and issues and their relationship to the agricultural sector
- identify how demographic and land ownership changes are impacting on inter-relationships between farming and physical and social infrastructure (e.g. education and schooling, community support services)
- explore the use of non-profit decision drivers (e.g. individual preferences and lifestyles, local resource recognition and culture and land attachment) to manage and adapt to change (as opposed to traditional efficiency and market considerations)
- identify industry and community needs for education, training and leadership, and increase awareness of education, training and leadership alternatives for particular rural market segments (for different stages of adoption cycle)
- research different approaches to training and extension, learning through groups, support to implementation after training, and methods to encourage continuous interaction and learning process and cultures

Expected key outputs for 2008–09

- evaluating the impact of information and communication technologies (ICTs) on the livelihood of rural communities
- development of online Planning Network for Aboriginal Natural Resource Management
- *Revisiting Missed Opportunities*—a re-evaluation of women's contribution to agriculture and mining
- development of a new five-year plan following a program review

Expected key outcomes for 2008–09

- development of an understanding of the impact of ICTs on the livelihood of rural communities by policy makers and community leaders
- policy development and implementation about rural women informed by the *Revisiting Missed Opportunities* report
- the role that online systems can play in natural resource management by Aboriginal communities understood by a range of stakeholders, including policy makers

Key performance indicators

- identified non-agricultural and regional infrastructure activities and issues and their relationship to the agricultural sector
- demographic and land ownership changes identified that are impacting on inter-relationships between farming and physical and social infrastructure
- social impact and opportunities resulting from physical, technological, demographic and structural changes in rural and regional Australia identified
- non-profit decision drivers (e.g. individual preferences and lifestyles, local resource recognition and culture and land attachment) to manage and adapt to change identified
- increased use of broadband and other electronic and information/ communication technologies

Rural People and Learning Systems budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	455,000	562,200	450,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	-	80,000	24,000	80,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	*12,000*	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	*8,994*	-
Publications	-	-	-	*10,000*	*1,974*	-
All Other Income	-	-	-	-	-	-
Other Income	-	-	-	22,000	10,968	-
Total Income	**-**	**-**	**-**	**557,000**	**597,168**	**530,000**
R&D Expenditure						
RESEARCH	-	-	-	490,500	462,000	473,000
Advisory Committee Expenses	-	-	-	6,500	6,500	7,000
External Research Management	-	-	-	-	50,000	-
Employee Expenditure	-	-	-	-	-	-
Communications	-	-	-	24,000	31,868	15,000
Meeting Expenses	-	-	-	-	*300*	-
Travel and Accommodation	-	-	-	*5,000*	*5,000*	*5,000*
Other Expenses	-	-	-	-	-	-
Consulting Fees	-	-	-	-	*4,000*	-
Temporary Staff	-	-	-	-	*6,500*	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	-	-	-	5,000	15,799	5,000
Program Management Fees	-	-	-	31,000	31,000	30,000
Total R&D Expenditure	**-**	**-**	**-**	**557,000**	**597,168**	**530,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**(0)**
Retained surpluses at beginning of period		-	-	335	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**335**	**-**	**(0)**

RIRDC Rural Leadership Program

Research Manager

Ms Jane Fisher
Ph: 02 6271 4149
Fax: 02 6271 4199
Email: jane.fisher@rirdc.gov.au

Objective

- to build research capacity through research scholarships and other fellowships
- to manage and support selected leadership capacity building initiatives in a strategic manner, including support of:
  - The RIRDC Rural Women's Award
  - Heywire
  - the Australian Rural Leadership Program

Strategic plan and internet accessibility

2008–09 will be a review year, exploring the potential for combining RIRDC's Rural Leadership Program with Rural People and Learning Systems into a program looking at leadership, adoption and rural communities. The Rural Women's Award website can be found at www.ruralwomensaward.gov.au

Sources of funds

This Program is funded from core funds. Collaborative investment has been received in 2007–08 for the RIRDC Australian Rural Women's Award from the ***Australian Women's Weekly***, the Department of Agriculture, Fisheries and Forestry the Department of Infrastructure, Transport, Regional Development and Local Government, the Office for Women, the ABC and Rural Press.

Total R&D expenditure budget

$635 000

Background

Leadership in rural Australia is a work in progress, with succession planning required to identify and train new talent as existing leaders move on, and as new issues emerge. There is also a need for leadership from youth, and from women. RIRDC has supported a number of leadership programs in the past, including the RIRDC scholarship program, the Australian Rural Leadership Program, the RIRDC Rural Women's Award, Nuffield, Heywire and other related bursaries and awards.

Key long-term strategies

- build research capacity in issues related to rural and regional Australia through funding research scholarships and other fellowships
- manage and support selected leadership capacity building initiatives in a strategic manner (such as the Rural Women's Award, Heywire and Australian Rural Leadership Program (ARLP))

Key strategies for 2008–09

- undertake a gap analysis of RIRDC's Rural Leadership Program and develop a strategic, five-year plan
- explore options for RDCs to pool their scholarship awards
- award scholarships for postgraduate students across at least two RIRDC programs
- explore the potential to award research fellowships in areas identified to be gaps within RIRDC's research programs
- develop and implement a mentoring program for young rural women between 18 and 35

Rural Women's Award 2008 winners and runners-up at the Award's National Reception with The Hon. Tony Burke, MP, Minister for Agriculture, Fisheries and Forestry

RIRDC Rural Women's Award

- award seven rural women with support for their business initiatives
- select a national winner and runner-up to represent the Award and RIRDC for 12 months
- attract sponsorship for the Award

Expected key outputs for 2008–09

- development of a leadership strategy for RIRDC with associated five-year plan integrated with the Rural People and Learning Systems Program
- decision made on pooling of RDC scholarship awards
- research scholarships awarded to postgraduate students in strategic areas across RIRDC programs
- study of the ability of regional organisations to learn, adapt and evolve to deliver effective natural resource management outcomes completed
- management and support of selected capacity building initiatives such as Australian Rural Leadership Program, support for rural women and youth, and postgraduate scholarships and other fellowships

Expected key outcomes for 2008–09

- implementation of a leadership strategy by RIRDC
- increase in leadership capacity in rural Australia

Key performance indicators

- evidence of improvements in the effectiveness of RIRDC support for education, training and leadership initiatives
- RIRDC research scholars employed in industries aligned with or related to RIRDC
- Increased numbers of rural boards with membership of RIRDC-sponsored graduates of the ARLP Program and winners of the RIRDC Rural Women's Award

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002280	An investigation of farmers' non-profit decision drivers	Geoff Kuenhe	08 8302 9188
PRJ-002486	Explore the use of non-profit decision drivers to manage and adapt to change	Amabel Fulton	03 6231 9033
*PRJ-002507	Scholarship—Tomorrow's leaders on tomorrow's world	Bronwynne Jones	02 6278 5611
*PRJ-002809	Scholarship—Agent based modelling for honeybee disease epidemiology	Jonathan Arundel	03 5034 0552
*PRJ-002811	Scholarship—Combined immunotherapy and chemotherapy for the treatment of mesothelioma	Haydn Kissick	0431 023 619
*PRJ-002813	Scholarship—The effect of *Melalueuca alternifolia* (tea tree) oil on microbial adhesion and biofilm formation	Trina-Jean Tan	0411 476 576
*PRJ-002815	Scholarship—Assessment of the net benefit of intensifying and diversifying the rice system in the Lao lowlands, and the dynamcis of farmer decision making on these changed lowland systems	Leigh Vial	leroy2@iinet.net.au
*PRJ-002816	Scholarship—The influence of vernalisation and day length on flowering physiology in ***Brunonia australis*** and the use of plant growth regulators to produce a compact florferous new product	Robyn Cave	07 5462 3423

** still to be finalised*

Rural Leadership budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	555,000	531,500	550,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	-	12,000	125,000	100,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	-	-	-	-	*201*	-
All Other Income	-	-	-	-	-	-
Other Income	-	-	-	-	201	-
Total Income	**-**	**-**	**-**	**567,000**	**656,701**	**650,000**
R&D Expenditure						
RESEARCH	-	-	-	520,000	486,700	635,000
Advisory Committee Expenses	-	-	-	-	0	-
External Research Management	-	-	-	-	46,000	-
Employee Expenditure	-	-	-	-	-	-
Communications	-	-	-	10,000	10,000	10,000
Meeting Expenses	-	-	-	-	*12,000*	-
Travel and Accommodation	-	-	-	*5,000*	*15,000*	*5,000*
Other Expenses	-	-	-	-	*30,000*	-
Consulting Fees	-	-	-	-	*25,000*	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	-	-	-	5,000	82,001	5,000
Program Management Fees	-	-	-	32,000	32,000	-
Total R&D Expenditure	**-**	**-**	**-**	**567,000**	**656,701**	**650,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**(0)**
Retained surpluses at beginning of period		-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**(0)**

Collaborative Partnership for Farming & Fishing Health & Safety

Research Manager

Ms Jane Fisher
Ph: 02 6271 4149
Fax: 02 6271 4199
Email: jane.fisher@rirdc.gov.au

Objective

- to improve the physical health of farming and fishing workers and their families
- to improve the mental health of farming and fishing families
- to improve the safety environment and work practices in farming and fishing industries

Strategic plan and internet accessibility

A new five-year plan will be developed in the 2008–09 financial year.

Sources of funds

Core partners are RIRDC, Australian Government Department of Health and Ageing (DOHA), Grains Research and Development Corporation (GRDC), Fisheries Research and Development Corporation (FRDC), Sugar Research and Development Corporation (SRDC) and Cotton Research and Development Corporation (CRDC).

Total R&D expenditure budget

$435 000

Background

The Joint Research Venture for Farm Health and Safety (JVFHS) was originally established in 2001 as a partnership between RIRDC, Australian Wool Innovation (AWI), CRDC, GRDC, Meat & Livestock Australia (MLA) and SRDC.

The objectives of the first five-year plan were to:

- increase the adoption of safe systems of work on farms
- develop the information and systems to ensure the health and safety of persons transporting, handling, applying and otherwise affected by agricultural and veterinary chemicals
- complete on-farm safety management packages for all major commodities, including horticultural industries and encourage their incorporation into broader farm management packages
- update and further develop training material and delivery modes more likely to be taken up by farmers
- maintain, support and utilise the collection of data on farm health and safety issues.

The JVFHS ended in June 2007. The new Collaborative Partnership for Farming and Fishing Health and Safety has been formed. Partners include RIRDC, CRDC, GRDC, SRDC, FRDC and the Australian Government Department of Health and Ageing.

Key long-term strategies

The research objectives of the program are to develop strong cross-sectoral collaboration to support high-quality research, development and extension that will improve:

- the physical health of farming and fishing workers and their families
- the mental health of farming and fishing families
- the safety environment and work practices in farming and fishing industries

The Collaborative Partnership for Farming & Fishing Health & Safety researches issues on the physical and mental health of farming and fishing workers and their families

Key strategies for 2008–09

- to be agreed by the Partnership

Expected key outputs for 2008–09

- a five-year plan for the Collaborative Partnership for Farming and Fishing Health and Safety (2007–2012)
- expansion of the Sustainable Farming Families (SFF) network into other primary industries by initiating training and development opportunities for rural health professionals working in other parts of Australia
- understanding of perceptions, attitudes and behaviours of participants in the SFF through a longitudinal study
- establishment of the parameters for researching occupational health and safety risk factors and personal health related to work and life in primary industries production

Expected key outcomes for 2008–09

- development of an understanding that programs that

seek to change behaviour must be people-centred and evidence-based with strong cross-sectoral collaboration
- understanding of pathways to adoption of occupational health and safety on farms and the fishing industry
- recognition by farming families that occupational health and safety is part of good risk management
- provision of information for the development of the FarmSafe Australia programs
- identification of appropriate strategies for the improvement of health and safety in primary industries, and for comparing the performance of industries

Key performance indicators

- at least four RDCs signed up as partners in the new Collaborative Partnership for Farming and Fishing Health and Safety
- development and implementation of a new five-year plan for the Collaborative Partnership for Farming and Fishing Health and Safety
- increased levels of understanding of farming and fishing health and safety issues
- improved farm and fishing health and safety policies, procedures and equipment through influence of policy makers, industry groups and manufacturers

Collaborative Partnership for Farming & Fishing Health & Safety budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	130,000	100,000	-	100,000	100,000	120,000
RIRDC Salary Contribution	-	-	100,000	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	230,000	250,000	270,000	230,000	240,142	400,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	*5,000*	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	*55,090*	-
Publications	-	-	-	-	*1,300*	-
All Other Income	-	-	-	-	-	-
Other Income	-	-	-	-	61,390	-
Total Income	**360,000**	**350,000**	**370,000**	**330,000**	**401,532**	**520,000**
R&D Expenditure						
RESEARCH	325,847	476,459	289,377	330,000	79,613	435,000
Advisory Committee Expenses	2,991	3,222	6,131	10,000	1,194	5,000
External Research Management	-	-	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	10,914	8,073	14,780	30,000	85,525	20,000
Meeting Expenses	-	-	-	-	*50*	-
Travel and Accommodation	*1,094*	*87*	*396*	-	*7,000*	-
Other Expenses	-	-	-	-	*150*	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	1,094	87	396	-	7,200	-
Program Management Fees	-	-	-	-	-	60,000
Total R&D Expenditure	**340,846**	**487,841**	**310,684**	**370,000**	**173,532**	**520,000**
Operating Result	**19,154**	**(137,841)**	**59,316**	**(40,000)**	**228,000**	**(0)**
Retained surpluses at beginning of period	165,012	184,166	46,325	46,326	105,641	333,641
Retained surpluses at end of period	**184,166**	**46,325**	**105,641**	**6,326**	**333,641**	**333,641**

Climate Change and Variability

Research Manager

Dr Tom Davison
Ph: 02 6271 4140
Fax: 02 6271 4199
Email: tom.davison@rirdc.gov.au

Objective

- to increase the adoption of climate risk management among farmers and natural resource managers
- improve seasonal forecasting
- investigate greenhouse gas mitigation options for agriculture

Sources of funds

This Program is funded with a contribution from RIRDC core funds.

Total R&D expenditure budget

$600 000

Background

An understanding of anthropogenic warming and cooling influences on climate has improved over the last decade. There is now a very high confidence that human activities since 1750 have had a warming effect globally (***Summary for Policy Makers***, Intergovernmental Panel Climate Change WG1 Fourth Assessment Report February 2007).

Climate change poses challenges for all sectors in the Australian economy and particularly for agriculture with its dependence on natural resources. There may also be opportunities resulting from climate change such as growth of new agricultural industries and mitigation of options through a new national emissions trading scheme.

Over a decade of R&D investment has occurred in the area of climate variability, most recently through the Managing Climate Variability Program (MCVP—Phase One), where Land & Water Australia (LWA) is managing agent on behalf of a consortium of RDCs, including RIRDC, and prior to that through another joint RDC program.

The emphasis in the MCVP is now on 60–90 day seasonal forecasting and prediction of climate events of relevance to farmers, not on climate change per se. The MCVP – Phase One collaborative and co-investment arrangements ceased in July 2007. A new science plan for investment starting in 2007–08 has been developed by LWA, with a strong focus on research to improve seasonal forecasting. Collaborative projects have been developed, or are being scoped, for south-west Western

Climate change poses challenges for all sectors in the Australian economy and particularly for agriculture with its dependence on natural resources such as the Murray River

Australia, northern Australia to the Tropic of Capricorn, eastern Australia and SEACI dealing with Southern Australia. There is some investment in communication and an innovations call will be held to determine other approaches outside of the commissioned work. The Bureau of Meteorology will be the preferred site for all climate forecasting information.

Key elements of the MCVP program going forward include the following:

For the science investment to deliver to the timeframes of investment decisions related to Australia's variable and changing climate it must have the following characteristics:

- **improve seasonal forecasting skill**—build on current forecasting systems and emerging modelling technology to improve seasonal forecasting capability
- **improving seasonal forecasting value**—providing seasonal forecasts at times and using products that assist producers in climate risk management
- **outline impacts and adaptations to changing climate**—provide scenarios of climate characteristics and variability in forms that support decisions for the timeframes of action
- **deliver client-specific decision-support tools**—build on both seasonal forecasting and scenarios of climate change with decision-support tools that identify investment opportunities and constraints across each of the three timeframes
- **foster understanding and uptake**—recognising the rapidly increasing knowledge on climate change and its implications, identify and promote opportunities for adoption of this improved knowledge, often building on the common understanding of Australia's variable climate.

Key long-term strategies

Climate change policy is a key policy initiative for the Australian

Government. The National Agriculture and Climate Change Action Plan 2006–2009 is being reviewed by the Australian Government Department of Agriculture, Fisheries and Forestry following the change of government. The four areas identified in this document are:

- adaptation strategies to build resilience into agricultural systems
- mitigation strategies to reduce greenhouse gas emissions
- research and development to enhance the agricultural sector's capacity to respond to climate change
- awareness and communication to inform decision making by primary producers and rural communities.

Managing climate variability program: climate variability and predicting seasonal rainfall has been a key strategy of the current MCVP program and preceding programs. The MCVP Phase 1 goals and sub-goals typify the recent directions of the program:

- to increase the capacity of Australia to capture opportunities and manage risks related to climate variability
- increased adoption (regions and industries)
- increased adoption (natural resources management)
- improved seasonal climate forecasts. The new plan for Phase 2 will have greater emphasis and investment in seasonal forecasting skill and reliability.

Climate Change Research Strategy for Primary Industries (CCRSPI): the RDCs identified the need for a coordinated approach to climate change work and set up a project—Climate Change Research Strategy for Primary Industries— to coordinate planning in this arena. The new cross-RDC consortium on climate change has conducted surveys, received written submissions and held a number of workshops to identify needs. The following areas have been identified as areas for collaboration:

- accessing information
- practice change
- seasonal forecasting
- climate projections
- understanding emissions
- linking policy, industry and science.

Key strategies for 2008–09

- invest in the Managing Climate Variability Program (MCVP) managed by LWA on behalf of research and development corporations
- influence the MCVP through a joint RDC and Australian Government Department of Agriculture, Fisheries and Forestry steering committee
- evaluate and develop, as appropriate, collaborative investment with other organisations, including the Australian Government Department of Agriculture, Fisheries and Forestry , Australian Greenhouse Office, RDCs in the arenas of:
  - climate change
  - greenhouse gas emissions
  - farm to catchment research and implementation

Expected key outputs for 2008–09

- MCVP investment and progress reports
- collaborative research projects established through CCRSPI

Expected key outcomes for 2008–09

- a new business plan and five-year program of investment potentially integrated with other RIRDC programs such as the Joint Venture Agroforestry Program

Key performance indicators

- completion of a revised business case for future investment in Climate Change and Variability

New projects being funded or under consideration in 2008–09 include:

Project no	Title	Researcher	Phone
PRJ-002526	Managing climate variability	Land & Water Australia	02 6263 6000

** still to be finalised*

Climate Change and Variability budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	100,000	207,000	400,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	-	-	-	200,000
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	-	-	-	-	-	-
All Other Income	-	-	-	-	-	-
Other Income	-	-	-	-	-	-
Total Income	**-**	**-**	**-**	**100,000**	**207,000**	**600,000**
R&D Expenditure						
RESEARCH	-	-	-	100,000	107,000	600,000
Advisory Committee Expenses	-	-	-	-	-	-
External Research Management	-	-	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	-	-	-	-	-	-
Meeting Expenses	-	-	-	-	-	-
Travel and Accommodation	-	-	-	-	-	-
Other Expenses	-	-	-	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Program Development	-	-	-	-	*100,000*	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	-	-	-	-	100,000	-
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**-**	**-**	**-**	**100,000**	**207,000**	**600,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**0**
Retained surpluses at beginning of period		-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**0**

Emerging Rural Issues

Research Manager

Dr Tom Davison
Ph: 02 6271 4140
Fax: 02 6271 4199
Email: tom.davison@rirdc.gov.au

Objective

- generate information about possible future trends, and through the process change mindsets and/or create a shared vision of the future
- assess future conditions based on current conditions and trends

Sources of funds

This Program is funded with a contribution from RIRDC core funds.

Total R&D expenditure budget

$250 000

Background

Establishment of a foresighting program in 2008–09 for RIRDC will enable the Corporation to identify emerging issues, and to make rational decisions that will inform future investment.

Programs currently funded by the Corporation focus on mature issues. As a research organisation with a mandate to focus on cross-cutting issues, the Corporation also needs to be able to identify emerging or 'blue sky' issues, establishing a reputation as a leader in new issues, so that it can develop appropriate research programs that will attract co-investment from other agencies.

This Program will explore forecasting as a cross-RDC collaborative activity, that will complement RIRDC's research program into mature issues. The National Rural Issues Portfolio has already undertaken work of this nature. The *Social and Economic Impacts of Water Trading* is one such project, and work funded through the Australian Farm Institute, such as *Implications for Australian Agriculture of Changing Demand for Animal Protein Needs in Asia*, is another example.

Key long-term strategies

The Emerging Rural Issues Program will enable RIRDC to:

- better mange its risks through strategic analysis
- make better investment decisions
- create innovative futures for Australian agriculture

Key strategies for 2008–09

- develop a foresighting capacity around emerging rural issues within RIRDC that has strong ownership amongst key stakeholders

RRDC will identify and fund research into emerging rural issues to help in making rational decisions that will inform future investment

Expected key outputs for 2008–09

- develop an environmental scanning capacity to identify and assess emerging rural issues
- commission assessments and reports on selected emerging issues
- use a range of measures to communicate outputs, including publications, workshops and conferences
- seek co-investment and participation from RDCs and government

Expected key outcomes for 2008–09

- better investment decisions by RIRDC based on an Emerging Rural Issues program

Key performance indicators

- development of an internal foresighting capacity within RIRDC
- analysis and reporting of key areas of high importance to Australian agricultural industries

Emerging Rural Issues budget statement

	2004-05 Actual ($)	2005-06 Actual ($)	2006-07 Actual ($)	2007-08 Budget ($)	2007-08 Forecast ($)	2008-09 Budget ($)
Income						
RIRDC Core Contributions	-	-	-	-	-	250,000
RIRDC Salary Contribution	-	-	-	-	-	-
Commonwealth Contributions	-	-	-	-	-	-
External Contributions	-	-	-	-	-	-
Statutory Industry Levies	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Industry Levy Penalties	-	-	-	-	-	-
Royalties	-	-	-	-	-	-
Project Refunds	-	-	-	-	-	-
Publications	-	-	-	-	-	-
All Other Income	-	-	-	-	-	-
Other Income	-	-	-	-	-	-
Total Income	**-**	**-**	**-**	**-**	**-**	**250,000**
R&D Expenditure						
RESEARCH	-	-	-	-	-	250,000
Advisory Committee Expenses	-	-	-	-	-	-
External Research Management	-	-	-	-	-	-
Employee Expenditure	-	-	-	-	-	-
Communications	-	-	-	-	-	-
Meeting Expenses	-	-	-	-	-	-
Travel and Accommodation	-	-	-	-	-	-
Other Expenses	-	-	-	-	-	-
Consulting Fees	-	-	-	-	-	-
Temporary Staff	-	-	-	-	-	-
Couriers	-	-	-	-	-	-
Levy Collection Costs	-	-	-	-	-	-
Other Expenses	-	-	-	-	-	-
Program Management Fees	-	-	-	-	-	-
Total R&D Expenditure	**-**	**-**	**-**	**-**	**-**	**250,000**
Operating Result	**-**	**-**	**-**	**-**	**-**	**-**
Retained surpluses at beginning of period		-	-	-	-	-
Retained surpluses at end of period	**-**	**-**	**-**	**-**	**-**	**-**

Corporate Management

General Manager

Mr Jeff Storer
Ph: 02 6271 4150
Fax: 02 6271 4199
Email: jeff.storer@rirdc.gov.au

Key areas of business

- Governance
- Finance and administration
- Human resource management
- Information technology
- Communications
- Cross-portfolio activity

Cross-portfolio activity

- Program impact evaluation
- Communications
- Program development
- Intellectual property management and commercialisation

Objectives

The RIRDC Corporate Management team is committed to business excellence in professional services to support the objectives of the Corporation

Background

Over the past three years the Corporation has made significant strategic investments in corporate management and business services capacity.

These recent investments included:

- standardisation and upgrade of hardware to the desktop
- standardisation of the desktop operating environments
- implementation and integration of reporting tools
- procurement and implementation of web-based project management system
- internal and external reporting efficiency and effectiveness
- higher levels of legislative and internal compliance
- policy development and standardisation
- contractual arrangements that support the activities and needs of the Corporation.

These investments will continue to assist the Corporation in being able to deliver on its objectives, provide greater monitoring and reporting on the progress on these objectives and meet internal and external governance requirements with greater ease.

Strategies

Provide corporate services that underpin the objectives of the Corporation through business excellence:

- ensuring governance systems meet legislative requirements, and deliver enhanced performance and compliance
- implementation of a reporting framework that supports the strategic direction, decision making and governance requirements of the Corporation
- attraction, retention and development of the highest quality people
- continuing to deliver the best use of integrated technology that supports and aligns with the strategic objectives of the Corporation
- develop communication strategies that target audiences to maximise knowledge outcomes
- continue to develop evaluation metrics, methodologies to demonstrate return on investment.

Key deliverables for 2008–09

Governance

- implement the Protective Security Manual
- consolidate and review Corporation policies

Finance and administration

- implement improved financial and operational performance reporting
- integrate the web-based portfolio management system into the investment and evaluation frameworks

Human resources

- implement learning and development programs that support staff development and align the skill set of individuals with the Corporation's evolving human resources needs
- implement metrics for analysis of human resource functions

Communications

- implement the outcomes of the communications review
- integrate RIRDC's website with the Corporation's knowledge base and also as our publications interface

Cross-portfolio activity

- implement the evaluation framework at project, program, portfolio and Corporation levels

Broader accountabilities

In addition, RIRDC executives will have key result areas covering:

- the broader human resource, financial and risk management responsibilities of the Corporation's Executive
- corporate contributions as a member of the RIRDC Executive
- modelling and exemplifying RIRDC values and behaviours.

Cross-Portfolio Activity

Program impact evaluation

Over the last nine years RIRDC has been conducting a program of evaluations of the impact of its research investments. The program has provided a detailed view of the performance of RIRDC's R&D investments and is reported in each annual report.

Over the past two years the Corporation has developed a new investment framework. This framework is designed as the lens in which the Board considers the Corporation's ongoing delivery of objectives, industry/sector R&D plans and supports its investment decision making. This new framework is a critical element in providing a robust framework for evaluating the impact of our R&D investments.

Each of the industries within the Corporation has or will develop an industry or sector R&D plan that clearly identifies and prioritises industry R&D needs and identifies R&D objectives, delivery strategies and performance measures.

The final and critical element of the investment framework is in the evaluation of our success in delivering on the R&D objectives of each of the R&D plans. The contribution that the program makes will be assessed against these plans on an annual basis with a full evaluation—including a cost–benefit analysis—in the fourth year of lapsing R&D plans to guide future investment.

This new framework will support the activities of the R&D Council of Chairs in collaboratively reporting on the R&D impact across rural research and development corporations.

Communications

The RIRDC communications program focuses on maximising knowledge outcomes from the Corporation's research and development. Targeted communications activities are geared towards delivering relevant knowledge products to stakeholders and selected audiences.

The Corporation has undertaken an external review of communications activities and will be implementing a new communications strategy in 2008–09 to ensure our communications activities are consistent with best practice.

Program development

Each year the Corporation allocates resources that enable us to identify and scope new opportunities. These have included areas such as trade and global competitiveness and, recently, work in the areas of energy and biofuels.

In 2008–09 a formal process will be implemented that identifies future investment priorities for the National Rural Issues Portfolio. This involves engaging portfolio stakeholders and identifying their R&D priorities through an annual National Rural Issues Conference. This will involve high-level participation from eminent speakers, government and industry to both identify and secure commitment to agreed priorities.

Appendices

A. Transmittal letter

Australian Government
Rural Industries Research and Development Corporation

Level 2, 15 National Circuit, Barton, ACT 2600
PO Box 4776, Kingston, ACT 2604
phone 02 6271 4100 | fax 02 6271 4199
email rirdc@rirdc.gov.au | www.rirdc.gov.au
abn 25 203 754 319

Ref: R05/73
File: C249.doc

30 May 2008

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

Dear Minister

I am pleased to submit for your approval the Annual Operational Plan 2008-09 of the Rural Industries Research and Development Corporation, as required under sections 25 and 26 of the *Primary Industries and Energy Research and Development Act 1989*.

This Plan has been drawn up with due reference to the RIRDC Corporate Plan 2007-2012. It addresses the Government's National Research Priorities, the new Rural Research and Development Priorities, industry developments and also Senator Troeth's letter of 11 January 1999.

The key R&D features of the Annual Operational Plan 2008–2009 for each program are summarised in the introductory section of this document, and dealt with in more detail in the section on RIRDC's Portfolios and Programs. In accordance with legislative requirements, each of these seeks to link the industry outcomes with the strategies for achieving these outcomes and the principal outputs.

The budget underpinning the Plan is covered in the section RIRDC 2008-09 Budget. Details on the individual program budget statements for 2008-09 are included in the section on RIRDC's Portfolios and Programs.

Yours sincerely

Mary Boydell
Chairperson

cc Dr Conall O'Connell, Secretary, Department of Agriculture, Fisheries and Forestry

enc

RIRDC Shaping the future

B. National and Rural Research Priorities—selected projects for 2008–09

National Research Priorities

National Research Priorities	RIRDC program	Project number	Project
An environmentally sustainable Australia	EFM	PRJ-000595	Assessment of Lotus (*Nelumbo nucifera*) for wastewater bioremediation
	NPP	PRJ-002336	Understanding the cropping behaviour of riberry (*Syzygium leuhmannii*)
A1: water— a critical resource	RIC	PRJ-002896	Rice yield and water productivity extension
A2: transforming existing industries	EOI	PRJ-002676	Flood irrigated tropical timber trials in the north of Western Australia
	FCR	PRJ-002286	Adoption by industry of fodder quality research from previous projects
	FCR	PRJ-002287	Adoption of the AFIA ChemCheck system by the export fodder industry
	HOR	PRJ-002404	National standards for track measurement and rating
	NPP	PRJ-000857	Commercialisation of Mume in Australia
	NPP	PRJ-002366	Shiitake mushroom production on Australian native tree species
	NPP	PRJ-002391	Changing decision making by LOTE growers
	NPP	PRJ-002297	Shelf life and olive oil stability
	NPP	PRJ-002333	Tropical exotic fruit industry—strategic direction setting
	NPP	PRJ-002399	Boosting rambutan productivity through improvements in fruit set.
	NPP	PRJ-002426	Further development of the stevia natural sweetener industry
	NPP	PRJ-002451	Opportunities for high protein fruit production with low quantities of water
	ORP	PRJ-002998	A model for an education program to support conversion
	PSE	PRJ-000003	Developing harvest technologies for *C. australasicum*
	WNP	PRJ-002435	Scent and consumer acceptability of cut Ptilotus flowers
	WNP	PRJ-002501	Assessing the commercial potential of six native floriculture products
	WNP	PRJ-002640	Commercial release of ornamental eucalypt varieties
	RIC	PRJ-002854	Weed management in Australian rice production
A3: overcoming soil loss, salinity and acidity	AFT	PRJ-000574	Large-scale research investments for best practice farm forestry and vegetation
	ORP	PRJ-002981	Improving soil fertility and productivity of organic farms—tailored compost
	NPP	PRJ-000868	Improved direct seeding establishment of commercial native plants
	WNP	PRJ-002655	Farm productivity and quality enhancement program
A4: reducing and capturing emissions in transport and energy generation	BBE-M2M	PRJ-002705	Biogas production by covered lagoons—part 1
	BBE	PRJ-002408	Evaluating biodiesel potential of Australian native plants
	BBE	PRJ-002522	Best fit biofuel production technologies for agro-industrial enterprises
A5: sustainable use of Australia's biodiversity	AFT	PRJ-000538	Farm trees—enhancing biodiversity nature conservation and natural pest control
	BBE	PRJ-002509	Prospective taxa for short-rotation bioenergy in the tropics and sub-tropics
	BBE	PRJ-002601	Sustainability framework for biobased products in Australia
	CCV	PRJ-002526	Managing climate variability
	EFM	PRJ-000670	Using precision agriculture technologies to manage landscapes—not just paddocks
	NPP	PRJ-002323	Drought tolerance of novel perennial legumes
	RIC	PRJ-000687	Reconciling farming with wildlife: monitoring vertebrate biodiversity
Promoting and maintaining good health **B1: a healthy start to life**	HOR	PRJ-002592	Histopathology of mares aborting due to *Equine Amnionitis* and foetal loss.
B2: ageing well, ageing productively	EOI	PRJ-000464	Clinical trial of kunzea oil for onychomycoses treatment-commercial potential
	HBE	PRJ-000544	An investigation into the therapeutic properties of honey
B3: preventive health care	FHS	PRJ-000542	Effectiveness of risk control measures to reduce occupational exposure to pesticides
	HOR	PRJ-002288	The science of horse training: implications for rider safety and horse welfare
	HOR	PRJ-002293	Virus and horse specific risk factors for EHV1 neurological disease
	HOR	PRJ-002300	Can cryotherapy following exercise reduce heat-induced tendon cell death?
	HOR	PRJ-002363	*In vitro* optimisation of conditions for laryngeal reinnervation surgery
	HOR	PRJ-002468	Diagnosis and control of small strongyle parasites of horses
	HOR	PRJ-002503	Development of an adenoviral vector based vaccine for *Rhodococcus equi*
	HOR	PRJ-002520	Identification of a serum biomarker for gastric ulceration in horses
	HOR	PRJ-002529	Snake envenomation in horses and its detection by rapid immunoassay
	HOR	PRJ-002530	The effect of swimming on exercise induced pulmonary haemorrhage in horses
	HOR	PRJ-002510	Improving the foot health of the domestic horse
	HOR	PRJ-002584	Laminitis treatment by delivery of drugs to the horse's foot
	HOR	PRJ-002589	Breath sampling for prediction of *Rhodococcus equi* infection in neonatal foals
	RPLS	PRJ-002280	An investigation of farmers' non-profit decision drivers
	RPLS	PRJ-000453	Regional development diversification and addressing the rural labour shortage
Frontier technologies for building and transforming Australian industries **C1: breakthrough science**	CME	PRJ-000631	Early feeding of prebiotics on development of the digestive system and gut microflora
	DEE	PRJ-002343	Establishment of a deer industry database
	EOI	PRJ-002500	Production of high quality plant extracts of Australian medicinal herbs
	FCR	PRJ-002298	Development of improved oat varieties for hay production—national program III
	HBE	PRJ-002916	Hygienic behaviour of the Western Australian bee breeding program
	HOR	PRJ-000726	Short term and future athletic performance of critically ill equine neonate
	NAP	PRJ-002364	Selective breeding programs for game bird and ratite farming
	NAP	PRJ-002461	Viral and endogenous retroviral detection and characterisation in crocodiles
	NPP	PRJ-000452	Grass roots-native perennial grasses for sustainable pasture systems
	RNF	PRJ-000775	Validation of KIDPLAN for use in angora goats
C2: frontier technologies	PSE	PRJ-002388	Development and use of diagnostic tools for subterranean clover red leaf disease
	PSE	PRJ-002442	Evaluation of possibilities for increased dryland lucerne seed production
C3: advanced materials	RNF	PRJ-002521	Improving production efficiency, quality and value-adding of rare natural fibres

National Research Priorities	RIRDC program	Project number	Project
C4:smart information use	CME	PRJ-002966	Quality assurance workshops—Pre-workshop micro-organism surveys
	HBE	PRJ-002933	Tasmanian floral data base
	HOR	PRJ-002591	Investigation of methods for storage of stallion semen at ambient temperature.
	HOR	PRJ-002394	Computational modelling of in vivo contact stresses in the equine fetlock joint
	NAP	PRJ-002551	Optimising genetics, reproduction and nutrition of dairy sheep and goats
	ORP	PRJ-003020	Scoping an organic knowledge hub
	PSE	PRJ-002381	Management of white fringed weevil and similar species in lucerne
	RNF	PRJ-000457	National evaluation of sires for the production of quality cashmere
	RPLS	PRJ-000377	Online planning network for Aboriginal natural resource management
	RIC	PRJ-002880	Revision of Rice R&D Plan
	RIC	PRJ-002946	Rice Growers' Association Communication Project
C5:Promoting an innovation culture and economy	BBE–M2M	PRJ-003003	Biogas production by covered lagoons
	FIB	PRJ-002668	The role of pollination in Australia's pollination reliant agriculture
	NAP	PRJ-002355	Alternative native ornamental fish
	NAP	PRJ-002424	Commercialising native freshwater turtle production in south-east Queensland
Safeguarding Australia **D1:critical infrastructure**	CME	PRJ-002493	Nuffield Farming Scholarship for an Australian chicken meat grower
D2:understanding our region and the world	GLC	PRJ-000702	Agricultural support—Implications for industry adjustment
	GLC	PRJ-000741	Agrifood globalisation and Asia (final two volumes)
	GLC	PRJ-002494	Electronic export documentation
D3:protecting Australia from invasive diseases and pests	CME	PRJ-000699	Improved control measures for infectious bursal disease virus (IBDV)
	CME	PRJ-000605	Differential typing of *Campylobacter*
	CME	PRJ-002325	The biosecurity of mass poultry mortality composting
	CME	PRJ-002473	Pop genetics, mixed species competition of *Eimeria necatrix* and *E. tenella*
	CME	PRJ-002798	Evaluating food-borne pathogen trans assoc with partial and full litter re-use
	CME	PRJ-002819	Test to differentiate Rispens CVI988 vaccine from wild type MDV
	HBE	PRJ-000510	Small hive beetle biology providing control options
	HBE	PRJ-000492	Development of treatment options for European foulbrood
	HBE	PRJ-002437	Spatial Information to support the management of a *Varroa destructor* incursion
	HBE	PRJ-002862	A study of *Nosema ceranae* in Australia

Rural Research Priority	RIRDC Program	Project Number	Project
Productivity and adding value	AFT	PRJ-000736	(NHT) Prioritisation of regional opportunities for agroforestry investment
	AFT	PRJ-000613	Australian Master TreeGrower: building capacity for integrated vegetation
	AFT	PRJ-000574	Large-scale research investments for best practice farm forestry and vegetation
	AFT	PRJ-000824	Multi-purpose 'healthy' grazing systems using perennial shrubs
	AFT	PRJ-000474	Competitiveness of *Acacia saligna* in alleys; root morphology and physiology
	AFT	PRJ-000665	Green ants as biological control agents in agroforestry
	AFT	PRJ-000868	Improved direct seeding establishment of commercial native plants
	AFT	PRJ-000729	Productivity of mallee agroforestry systems with various competition management
	AFT	PRJ-000477	Hydrological impacts and productivity interactions of integrated oil-mallee
	CME	PRJ-000264	Physiological and nutritional approaches to alleviate heat stress
	CME	PRJ-002966	Quality assurance workshops—pre-workshop microorganism surveys
	CME	PRJ-002473	Pop genetics, mixed species competition of *Eimeria necatrix* and *E. tenella*
	DEE	PRJ-002508	Communication and information programs for the Australian deer industry
	DEE	PRJ-002343	Establishment of a deer industry database
	EFM	PRJ-000471	Farm energy calculator
	EOI	PRJ-002676	Flood irrigated tropical timber trials in the north of Western Australia
	EOI	PRJ-002500	Production of high-quality plant extracts of Australian medicinal herbs
	FCR	PRJ-002287	Adoption of the AFIA ChemCheck system by the export fodder industry
	FIB	PRJ-000254	Tracking and tracing systems for small business biosecurity
	FIB	PRJ-000809	Infrared and raman microspectroscopic analysis of food content and integrity
	HOR	PRJ-002288	The science of horse training: implications for rider safety and horse welfare
	HOR	PRJ-002293	Virus and horse specific risk factors for EHV1 neurological disease
	HOR	PRJ-002300	Can cryotherapy following exercise reduce heat-induced tendon cell death?
	HOR	PRJ-002363	In vitro optimisation of conditions for laryngeal reinnervation surgery
	HOR	PRJ-002503	Development of an adenoviral vector based vaccine for *Rhodococcus equi*
	HOR	PRJ-002520	Identification of a serum biomarker for gastric ulceration in horses
	HOR	PRJ-002529	Snake envenomation in horses and its detection by rapid immunoassay
	HOR	PRJ-002530	The effect of swimming on exercise induced pulmonary haemorrhage in horses
	HOR	PRJ-002510	Improving the foot health of the domestic horse
	HOR	PRJ-002787	Scholarship—Kellie Tinworth
	HOR	PRJ-000216	Pathophysiological mechanisms in equine osteochondrosis
	HOR	PRJ-000279	Intra-articular medication as risk factor for musculoskeletal injury
	HOR	PRJ-000272	Pathogenesis of distal limb breakdown injuries in thoroughbred racehorses
	HOR	PRJ-002592	Histopathology of mares aborting due to equine amnionitis and foetal loss
	HOR	PRJ-002394	Computational modelling of in vivo contact stresses in the equine fetlock joint
	HOR	PRJ-002591	Investigation of methods for storage of stallion semen at ambient temperature
	NAP	PRJ-002364	Selective breeding programs for game bird and ratite farming
	NAP	PRJ-002461	Viral and endogenous retroviral detection and characterisation in crocodiles
	NAP	PRJ-002551	Optimising genetics, reproduction and nutrition of dairy sheep and goats
	NAP	PRJ-002355	Alternative native ornamental fish
	NAP	PRJ-002424	Commercialising native freshwater turtle production in south-east Queensland
	NPP	PRJ-002336	Understanding the cropping behaviour of Riberry (*Syzygium leuhmannii*)
	NPP	PRJ-002366	Shiitake mushroom production on Australian native tree species
	NPP	PRJ-002297	Shelf life and olive oil stability
	NPP	PRJ-002333	Tropical exotic fruit industry—strategic direction setting
	NPP	PRJ-002399	Boosting rambutan productivity through improvements in fruit set
	NPP	PRJ-002426	Further development of the stevia natural sweetener industry
	NPP	PRJ-002451	Opportunities for high protein fruit production with low quantities of water
	NPP	PRJ-002323	Drought tolerance of novel perennial legumes
	NPP	PRJ-000589	Daikon—a promising anti-cancer vegetable
	ORP	PRJ-000579	Optimising the quality and yield of spelt and other speciality grains under
	RIC	PRJ-002896	Rice yield and water productivity extension
	RIC	PRJ-002946	RGA communication project
	RLP	PRJ-002608	RIRDC postgraduate scholarship
	RLP	PRJ-000892	Postgraduate scholarship—Zamira Gibb
	RNF	PRJ-002779	Analysing mohair benchmarking data
	RNF	PRJ-002521	Improving production efficiency, quality and value-adding of rare natural fibres
	RPLS	PRJ-000770	New immigrants in regional and rural Australia: attraction and retention
	RPLS	PRJ-000453	Regional development diversification and addressing the rural labour shortage
	RPLS	PRJ-002280	An investigation of farmers' non-profit decision drivers
	TTO	PRJ-002395	Anticancer activity of *Melaleuca alternifolia* (tea tree) oil
	TTO	PRJ-002403	Microbial adaptation and tolerance to tea tree oil
	TTO	PRJ-002334	Tea tree oil for control of sheep ectoparasites
	WNP	PRJ-002435	Scent and consumer acceptability of cut Ptilotus flowers
	WNP	PRJ-002501	Assessing the commercial potential of six native floriculture products
	WNP	PRJ-002640	Commercial release of ornamental eucalypt varieties
	WNP	PRJ-002655	Farm Productivity and Quality Enhancement Program
Supply chain and markets	AFT	PRJ-000463	FloraSearch (stage 3)—selection and development of multi-purpose perennial
	GLC	PRJ-000702	Agricultural support—-implications for industry adjustment
	GLC	PRJ-000741	Agrifood globalisation and Asia (final two volumes) [Continuation of DFT-1A]
	GLC	PRJ-002494	Research—electronic export documentation
	HBE	PRJ-002933	Tasmanian Floral Data Base
	RIC	PRJ-002880	Revision of Rice R&D Plan

Rural Research Priority	RIRDC Program	Project Number	Project
Natural resource management	AFT	PRJ-000808	Catchment scale evaluation of trees, water and salt (previously CAL-8A)
	AFT	PRJ-000538	Farm trees: enhancing biodiversity, nature conservation and natural pest co
	BBE	PRJ-002509	Prospective taxa for short-rotation bioenergy in the tropics and sub-tropics
	BBE	PRJ-002601	Sustainability framework for biobased products in Australia
	CME	PRJ-000226	Piloting chicken litter usage in broadacre cropping: setting research directions
	EFM	PRJ-000670	Using precision agriculture technologies to manage landscapes not just paddocks
	EFM	PRJ-000650	Integrating inland saline aquaculture and livestock production
	EFM	PRJ-000568	Revegetation by design—promoting the 'on-farm' use of native vegetation
	EFM-	PRJ-000675	Utilising NIRS and DNA technologies to manage rangeland sustainability
	FCR	PRJ-002298	Development of improved oat varieties for hay production: national program III
	FIB	PRJ-002668	The role of pollination in Australia's pollination reliant agriculture
	NPP	PRJ-000452	Grass roots—native perennial grasses for sustainable pasture systems
	NPP	PRJ-002391	Changing decision making by LOTE growers
	NPP	PRJ-000585	Intensive seed-production systems to commercialise native grasses
	NPP	PRJ-000003	Developing harvest technologies for *C. australasicum*
	ORP	PRJ-000655	Pastoral organic lamb production
	ORP	PRJ-002998	A model for an education program to support conversion
	ORP	PRJ-002981	Improving soil fertility and productivity of organic farms—tailored compost
	ORP	PRJ-002886	Comparison of organic certification services for new and converting producers
	ORP	PRJ-002758	Travel grant to present research at 2nd ISOFAR Conference, Italy, June 2008
	RIC	PRJ-002854	Weed management in Australian rice production
	RPLS	PRJ-000845	Critical breaking point? Understanding farming families' pressures plans
	RPLS	PRJ-000171	Productive and environmental implications of farm consolidation and fragmentation
	RWS	PRJ-000516	Tammar wallaby harvesting as a sustainable wildlife enterprise
	RWS	PRJ-000680	Barrier Ranges Sustainable Wildlife Enterprise Trial
	RWS	PRJ-000782	Sustainable use of wildlife and tourism on pastoral properties in northern Australia
	RWS	PRJ-000761	Optimising economic returns from mixed livestock and wildlife systems
	RWS	PRJ-000814	Destocking rangelands: effects on carbon sequestration fire management and biodiversity
Biosecurity	CME	PRJ-002325	The biosecurity of mass poultry mortality composting
	CME	PRJ-002798	Evaluating food-borne pathogen trans assoc with partial and full litter re-use
	CME	PRJ-002819	Test to differentiate Rispens CVI988 vaccine from wild type MDV
	FIB	PRJ-000623	Biosecurity and the small landholder: linking spatial data to risk analysis
	HBE	PRJ-002862	A study of *Nosema ceranae* in Australia
	HBE	PRJ-002437	Spatial information to support the management of a *Varroa destructor* incursion
	HOR	PRJ-002468	Diagnosis and control of small strongyle parasites of horses
	HOR	PRJ-002584	Laminitis treatment by delivery of drugs to the horse's foot
	HOR	PRJ-002589	Breath sampling for prediction of *Rhodococcus equi* infection in neonatal foals
	NPP	PRJ-000597	An investigation into some important pests and diseases of culinary herbs a
Improve the skills to undertake research and apply its findings	BBE	PRJ-002408	Evaluating biodiesel potential of Australian native plants
	BBE	PRJ-002522	Best fit biofuel production technologies for agro-industrial enterprises
	EFM	PRJ-000657	Green roof-tops and self-sufficient fresh food production
	FHS	PRJ-000542	Effectiveness of risk control measures to reduce occupational exposure to pesticides
	HOR	PRJ-000284	Modulation of gap junction expression in healing equine tendon
	HOR	PRJ-000242	Towards more effective laryngeal reinnervation in horses
	HOR	PRJ-000239	Troponin levels in Australian horses
	NPP	PRJ-000532	Improving latex extraction technology by debarking guayule
	NPP	PRJ-000527	Commercial potential of red bayberry in Australia
	RLP	PRJ-002610	RIRDC postgraduate scholarship
	RLP	PRJ-002606	RIRDC postgraduate scholarship
	RLP	PRJ-000828	Heywire—the ABC gives regional youth a voice
	RPLS	PRJ-000897	Revisiting missed opportunities: a re-evaluation of women's contribution to agriculture
Promote the development of new and existing technology	BBE–M2M	PRJ-003003	Biogas production by covered lagoons
	CME	PRJ-002493	Nuffield Farming Scholarship for an Australian chicken meat grower
	EFM	PRJ-000595	Assessment of Lotus (*Nelumbo nucifera*) for wastewater bioremediation
	FCR	PRJ-002286	Adoption by industry of fodder quality research from previous projects
	HBE	PRJ-002916	Hygienic behaviour of the Western Australian bee breeding program
	HOR	PRJ-002404	National standards for track measurement and rating
	ORP	PRJ-003020	Scoping an organic knowledge hub
	PSE	PRJ-002388	Development and use of diagnostic tools for subterranean clover red leaf disease
	PSE	PRJ-002442	Evaluation of possibilities for increased dryland lucerne seed production
	PSE	PRJ-002381	Management of white fringed weevil and similar species in lucerne
	RPLS	PRJ-000377	Online planning network for Aboriginal natural resource management
	RPLS	PRJ-000762	Evaluating the impact of ICTs on the livelihood of rural communities
	RPLS	PRJ-000411	Legal compliance for primary industry—study program best practice model

C. Notification of significant events

The Corporation has reviewed this Plan in terms of section 15 of the *Commonwealth Authorities and Companies Act 1997*, which defines a particular class of proposal as 'significant' and notifiable to Ministers.

The Corporation wrote to the Minister on 17 December 2007, in the context of section 15, advising that the RIRDC Board approved a proposal for RIRDC to participate in a bid for a second term of the Australian Poultry Cooperative Research Centre at their meeting on 5 December 2007.

D. Consultation with stakeholders

RIRDC has two organisations prescribed by section 7 of its legislation. This requires RIRDC to report on its activities each financial period. This accountability runs parallel to RIRDC's Annual Report to the Minister and the Parliament.

Reporting for the 2007–08 period occurred as follows:

- National Farmers' Federation on 12 March 2008
- the Australian Chicken Meat Federation on 10 April 2008.

E. Service charter

Enabling legislation and the Board

RIRDC's enabling legislation is the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act 1989). (see Appendix G on page xx).

The RIRDC Board is accountable to the Parliament of Australia through the Minister for Agriculture Fisheries and Forestry and:

- sets strategic direction and establishes policies for the Corporation
- oversights operational and functional performance against budget and other key performance indicators on behalf of stakeholders.

Core business

To facilitate a more profitable, dynamic and sustainable rural sector by maximising the knowledge outcomes from our R&D investments for Australian industries and government in:

- new rural industries
- established rural industries
- national rural issues

Core principles in RIRDC's approach to its mandate are:

- **collaboration**—RIRDC consults widely with our industry and government stakeholders to determine investment strategies and priorities and seeks strong collaborative arrangements with other funding partners and research providers where this can enhance outcomes
- **facilitation**—RIRDC facilitates more effective use of community and scientific expertise in the creation of new knowledge and its adoption
- **innovation**—RIRDC invests in innovative solutions to the problems and constraints facing its key stakeholders

Stakeholders

- the Australian Government on behalf of rural industries and taxpayers
- industry funders
- the Australian community

Primary clients

- for RIRDC related industries, all participants in the marketing chain (producers, processors, distributors and consumers)
- on RIRDC's strategic cross-sectoral program, the National Farmers' Federation on behalf of all rural industries

Industry consultations

Communications channels between RIRDC and rural industries meet two essential functions—accountability and bringing industry influence to bear on the research agenda. At the peak industry level, the Corporation is accountable to:

- National Farmers' Federation
- Australian Chicken Meat Federation.

All of the research programs have reference steering committees with stakeholder membership.

Reporting to stakeholders

There are four key accountability documents for stakeholders:

- a five-year Corporate Plan that sets out strategies, directions and performance indicators for the Corporation
- five-year R&D plans for each industry program within new rural industries, established rural industries and national rural issues
- an annual operational plan that sets out yearly objectives to give effect to the five-year Corporate Plan, the five-year industry plans, the annual budget and annual research priorities
- the annual report, which sets out achievements against objectives, budgets and administration costs.

F. RIRDC Research & Development Advisory Committees Chairs

Bioenergy, Bioproducts and Energy
Chair: Dr Roslyn Prinsley (phone: 02 6271 4120)

Buffalo
Chair: Mr Douglas Robertson (phone 02 6848 5315)

Chicken Meat
Chair: Mr Barry Shay (phone 07 3398 1766)

Collaborative Partnership for Farming & Fishing Health & Safety
Chair to be advised

Deer
Chair: Ms Nola Anderson (phone 03 5626 7013)

Essential Oils and Plant Extracts
Chair: Dr Roslyn Prinsley (phone: 02 6271 4120)

Horses
Chair: Dr John Freestone (phone: 02 6576 4200)

Fodder Crops
Chair: Dr Jeff Hoffman (phone: 02 6920 6233)

Food Integrity and Biosecurity
Chair: Ms Jane Fisher (phone: 02 6271 4149)

Global Competitiveness
Chair: Dr Tom Davison (phone: 02 6271 4130)

Honeybee
Chair: Mr Des Cannon (phone 02 6236 3294)

Joint Venture Agroforestry Program
Chair: Dr Glen Kile (phone 03 9614 7544)

Kangaroo
Chair: Mr Brian Topper (phone 02 9261 1900)

New Animal Products
Chair: Dr Ian McCausland (phone: 02 4843 2211)

New Plant Products
Chair: Dr Roslyn Prinsley (phone: 02 6271 4120)

Organics
Chair: Mr Don Fraser (phone 03 9841 7794)

Pasture Seeds
Chair: Mrs Penny Hendy (phone 03 5865 8312)

Rare Natural Animal Fibres
Chair: Dr Carol Mathew (phone 03 5429 1316)

Rice
Chair: Mr Ian Mason (phone: 03 5883 9454)

RIRDC Rural Leadership Program
Chair: Ms Jane Fisher (phone: 02 6271 4149)

Rural People and Learning Systems
Chair: Ms Jane Fisher (phone: 02 6271 4149)

Tea Tree Oil
Chair: Ms Pat Bolster (phone 02 6674 2991)

Wildflower and Native Plants
Chair: Ms Christine Horsman (phone 08 8389 3057)

G. Enabling legislation—*The Primary Industries and Energy Research and Development Act 1989* (extract)

Section 3: Objects

The objects of the RIRDC, deriving from section 3 of the PIERD Act 1989, 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 and 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 of the community in general and the scientific community in particular; and

d.improving accountability for expenditure upon research and development activities in relation to primary industries.

Section 11. Functions

The functions of the RIRDC, deriving from section 11 of the PIERD Act 1989, are:

a. to investigate and evaluate the requirements for research and development in relation to the primary industry or class of primary industries in respect of which it was established and, on the basis of such investigation and evaluation:
   i. to prepare an R&D plan under section 19;
   ii. review and revise the plan; and
b. to prepare an annual operational plan under section 25 for each financial year;
c. 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;
d. 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;
e. to facilitate the dissemination, adoption and commercialisation of the results of research and development in relation to the primary industry or class of primary industries in respect of which the Corporation was established; and
f. such other functions as are conferred on the Corporation by this Act or any other Act.

Section 25 Annual Operational Plans:

25 Annual operational plans

(1) An R&D Corporation must, for each financial year during which an R&D plan is in force, prepare, in written form, an annual operational plan that is expressed to relate to that financial year.
(2) The annual operational plan is to:
(a) specify the broad groupings of R&D activities that the R&D Corporation proposes to fund, wholly or partly, during the financial year; and
(b) describe how and to what extent funding those activities will:
   (i) give effect to the R&D plan in force during that financial year; and
   (ii) in particular, pursue the strategies outlined in the R&D plan and help to achieve the objectives described in the R&D plan; and
(c) provide an estimate of:
   (i) the total amounts likely to be spent by the Corporation in respect of each broad grouping of R&D activities the Corporation proposes to fund during the financial year; and
   (ii) the total of the amounts likely to be spent by the Corporation under section 33, other than paragraph 33(1)(a), during the financial year; and
   (iii) the total of the amounts referred to in subparagraphs (i) and (ii); and
   (iv) the total of the amounts that are likely to be paid to the Corporation during the financial year (other than the amounts paid under section 30 or 30A).
(3) A reference in this section to R&D activities that an R&D Corporation proposes to fund includes a reference to R&D activities that the Corporation is prepared, subject to its examination of specific proposals, to fund.
(4) If charge imposed on forest products under Schedule 8 to the *Primary Industries (Customs) Charges Act 1999* or under the repealed *Forest Industries Research Import Charge Act 1993* is attached as a levy to an R&D Corporation established in respect of forest industries, the R&D Corporation's annual operational plan must include, in the broad groupings of R&D activities that the R&D Corporation proposes to fund, R&D activities that are relevant to forest products of a kind that are imported.

33 Expenditure of money of R&D Corporations:

(1) An R&D Corporation's money may be spent only:
(a) for the purpose of funding R&D activities included in the broad groupings of R&D activities specified in an annual operational plan prepared by the Corporation and in force when payments are made; and
(b) in payment or discharge of the expenses and liabilities incurred by the Corporation in the performance of its functions or the exercise of its powers; and
(c) in payment of remuneration and allowances payable:
   (i) under sections 68 and 81 to the Corporation's directors; or
   (ii) under section 89 to members of committees established by the Corporation under that section; and
(d) in payment to the Commonwealth of amounts payable under section 34; and
(da) in payment to the Commonwealth of amounts payable under subsection 18(3) of the Primary Industries Levies and Charges Collection Act 1991; and
(db) if the Corporation is established in respect of forest industries—in payment of amounts for which the R&D Corporation is liable under subsections 10(8) and 11(9) of the Primary Industries Levies and Charges Collection Act 1991; and
(e) in payment of amounts in respect of expenses (including the payment of remuneration and allowances) incurred by a Selection Committee in performing its function, and exercising its powers, in relation to the selection of directors for appointment to the Corporation; and
(f) in making any other payments that the Corporation is authorised or required to make under this Act.
(2) An R&D Corporation is liable to pay the expenses, and discharge the liabilities, incurred by a Selection Committee in connection with the performance of its function, and the exercise of its powers, in relation to the selection of directors for appointment to the Corporation.

H. List of abbreviations

ABC	Australian Broadcasting Corporation
AFIA	Australian Fodder Industry Association
ALTRIG	Australian Low Rainfall Tree Improvement Group
AQIS	Australian Quarantine and Inspection Service
AWI	Australian Wool Innovation
CIE	Centre for International Economics
CRC	Cooperative Research Centre
CRDC	Cotton Research and Development Corporation
CSIRO	Australian Government Scientific and Industrial Research Organisation
DNA	deoxyribonucleic acid
EFA	Equestrian Federation of Australia
EI	equine influenza
EMS	Environment Management Systems
FRDC	Fisheries Research and Development Corporation
FTA	Free Trade Agreements
GIS	geographic information system
GRDC	Grains Research and Development Corporation
GVP	gross value of production
GWRDC	Grape and Wine Research and Development Corporation
HAL	Horticulture Australia Limited
IBDV	Infectious Bursal Disease Virus
ICTs	information, communication and technologies
IFOAM	International Federation of Organic Agriculture Movements
IP	Intellectual Property
ISO	International Standards Organisation
JVAP	Joint Venture Agroforestry Program
JVFHS	Joint Research Venture for Farm Health and Safety
LWA	Land and Water, Australia
MCVP	Managing Climate Variability Program
MDBC	Murray-Darling Basin Commission
MDV	Marek's disease virus
MLA	Meat and Livestock Australia
MTG	Master TreeGrower program
NFF	National Farmers' Federation
NIR	Near Infrared Spectroscopy
NRM	Natural Resource Management
OECD	Organisation for Economic Cooperation and Development
OFA	Organic Federation of Australia
OHS	Occupational Health and Safety
PISC	Primary Industries Standing Committee
RAS	Resilient Agricultural Systems Program
REACH Regulation	Registration, Evaluation, Authorisation and Restriction of Chemical substances (EU regulation 1/6/2007)
RDCs	Research and Development Corporations
RGA	RiceGrowers' Association
RIRDC	Rural Industries Research and Development Corporation
SCCP	Scientific Committee on Consumer Products of the European Commission's Directorate-General for Health and Consumer Protection
SME	Small and Medium Enterprise
SRDC	Sugar Research and Development Corporation
SWE	Sustainable Wildlife Enterprise
SWOT	Strengths, weaknesses, opportunities and threats
WTO	World Trade Organization

RIRDC Program abbreviations

AFO	Asian Food
AFT	Agroforestry and Farm Forestry
BBE	Bioenergy, Bioproducts and Energy
BUF	Buffalo
CCV	Climate Change and Variability
CME	Chicken Meat
CVCB	Cooperative Venture for Capacity Building
DEE	Deer
EFM	Environment and Farm Management
EOI	Essential Oils and Plant Extracts
FCR	Fodder Crops
FHS	Collaborative Partnership for Farm Health and Safety
FIB	Food Integrity and Biosecurity
GCL	Global Competitiveness
HBE	Honeybee
HOR	Horse
NAP	New Animal Products
NPP	New Plant Products
M2M	Methane to Market
ORG	Organics
PSE	Pasture Seeds
RIC	Rice
RRLP	The RIRDC Rural Leadership Program
RNF	Rare Natural Animal Fibres
RPLS	Rural People and Learning Systems
RWS	Rangelands and Wildlife Systems
TTO	Tea Tree Oil
WNP	Wildflowers and Native Plants
FFHS	Collaborative Partnership for Farming and Fishing Health and Safety

www.rirdc.gov.au

RIRDC new ideas for rural Australia

RIRDC Annual Operational Plan 2008–09

SPINE