

RIRDC Submission to the Agriculture and Food Policy Reference Group

5/7/05

Key Points

- *The Rural Industries Research and Development Corporation is focussed on scientific innovation to increase the profitability, sustainability and resilience of rural industries and communities.*
- *Rural R&D is, and will continue to be, the critical driver of Australian agricultural productivity growth, sustainability and exports.*
- *Co-investment with the private sector is essential to ensure that the applied research RIRDC focuses on is adopted by food and fibre production industries.*
- *RIRDC makes a key contribution to productivity through innovation that creates opportunity and enables adaptation to change in the rural sector.*
- *RIRDC invests in three areas*
 - *New industries (such as essential oils, wildflowers, and Asian foods)*
 - *Established industries (such as chicken meat, honeybees, and rice)*
 - *National rural issues (such as trade policy, farm health and safety, global competitiveness, food integrity and biosecurity)*
- *RIRDC is the sole RDC that works on national rural issues.*
- *RIRDC has over 10 years experience in the successful management of Joint Ventures (in Farm Health and Safety, Capacity Building, Agroforestry)*
- *RIRDC is currently scoping research programs in structural adjustment and regional development*
 - *Structural adjustment - developing a better understanding for government and industry of the drivers, responses and strategic policy options. Understanding the role of industry diversification*
 - *Regional development – understanding the role of diversification and adjustment in regional development*
- *Some key RIRDC successes are*
 - *A series of new crops and new farming methods have been brought into the Australian food and fibre systems ranging from canola and pulse crops to Asian vegetables, novel tropical fruit crops, rabbit, buffalo, kangaroo harvesting, better environmental management systems and food quality assurance. These are and have been drivers of diversification.*
 - *Trade Gains – RIRDC research has demonstrated the large benefits of trade liberalisation and identified solutions to achieve reform. Both the NFF and Australian trade representatives have widely praised these documents as part of the Australian policy push to liberalise trade in agriculture.*
 - *Improved Rice Water Use – invested in research to improve productivity and water management for rice*

- *Coffee Harvester Breakthrough – RIRDC helped develop a mechanical harvester which enabled local producers to develop an industry capable of producing world’s best product.*
- *New Agroforestry Approaches – design of new phase farming and alley belt systems to manage groundwater in saline catchments*
- *Innovative crop diversity from wildflowers, to olives, to capers, tropical fruits, new pulse varieties, oil seed crops for saline low rainfall areas give farmers new products to work with and to support new entrants to agriculture.*
- *RIRDC Rural Women’s Award – more women in leadership positions in their industries*
- *Asian Foods Pioneer – projects on all aspects of production and handling*

Introduction

The Rural Industries Research and Development Corporation (RIRDC) submission to *Ensuring a profitable and sustainable agriculture and food sector in Australia* focuses on section 7. ‘Research, development, innovation and technology’. We start with some general comments about RIRDC, its role and what it does. This is followed by our specific responses to the R&D questions raised in the issues paper.

RIRDC was established in July 1990 to work closely with Australian rural industries on the organisation and funding of their research and development needs. As a statutory corporation, RIRDC provides national leadership, manages and funds priority research and development, fosters change and development, and delivers practical outcomes across rural industry sectors. RIRDC invests in research and development on behalf of government and industry for the benefit of the rural sector. RIRDC manages 611 projects with planned expenditure for 2005-2006 of \$24m.

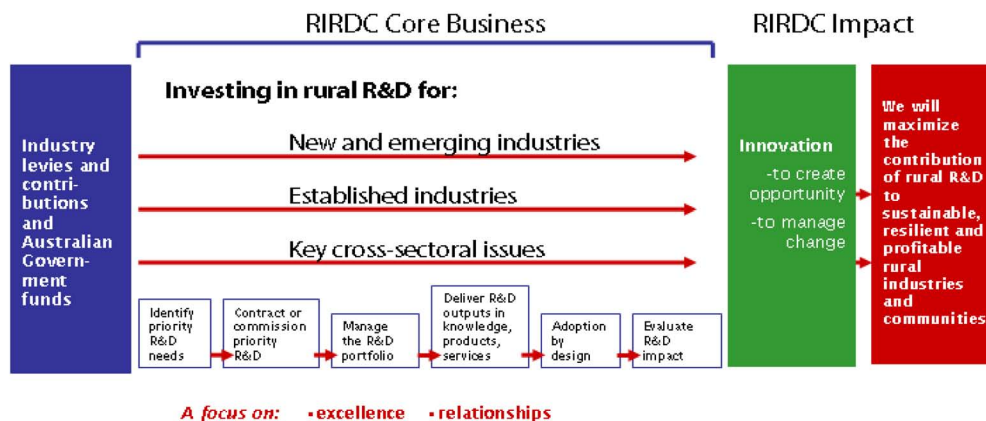
RIRDC invests in rural research and development in three areas:

- new industries (such as essential oils, wildflowers, and Asian foods)
- established industries (such as chicken meat, honeybees, and rice)
- national rural issues (such as farm health and safety, global competitiveness, food integrity and biosecurity)

RIRDC’s key clients and stakeholders are government, rural industries and communities and research providers.

Our aim is to maximise the contribution of RIRDC’s investment in R&D to profitable, sustainable and resilient rural industries and communities through increased innovation and adoption.

RIRDC’s research provides options for producers and communities to increase their profitability and to diversify, by identifying opportunities and helping to manage change in sectors and regions.



RIRDC's business approach is:

- identifying priority research and development using the expertise of our management and R&D Advisory Committees
- contracting and/or commissioning R&D where opportunities and needs are identified
- managing R&D portfolios
- delivering the results of R&D to industries, communities, and governments by producing quality publications, products and services through workshops, seminars, conferences and regional events
- facilitating the adoption of innovations by rural industries
- monitoring RIRDC's R&D impact by regularly evaluating our research using benefit/cost analysis
- surveying stakeholders needs

RIRDC's annual investment in R&D is appropriated from the Australian Government, approximately \$24 million, sourced from industry levies matched by the Government for some established industries, voluntary industry contributions and other Australian Government sources, such as joint ventures with other R&D Corporations. Overall Government funds account for about three quarters of the budget. Even in those industries without a levy we aim to maximise industry co-funding as this commitment is one of the surest ways of guaranteeing both engagement in the project and uptake of the outcomes.

RIRDC Delivers Innovation for a Profitable and Sustainable Agriculture and Food Sector in Australia

The discussion paper on *Ensuring a profitable and sustainable agriculture and food sector in Australia – issues for consideration* (DAFF 2005) identifies a broad range of issues impacting on the future of the agriculture and food sector in Australia, and poses a number of questions in relation to each. A number of the issues raised are cross-sectoral, affecting both large and niche industry sectors in rural Australia. RIRDC's research and development program is relevant to many of these issues. By way of example:

- International and domestic markets
 - *Why market reforms matter 04/110*
 - *Termites in the basement- to free up free trade, fix the WTO's foundation 03/092*
 - *Adoption of environmental management systems – analysis of 40 case studies 05/032*
 - *International trade and environmental management systems in agriculture 04/038*
 - *Global demographic change and demand for food in Australia 05/014*
 - *Global population projections – is the UN getting it wrong 04/041*
 - *Marketing agricultural sustainability – driving environmental improvement with marketplace benefits from environmental labelling 04/050*
 - *Green marketing and environmental management systems – assessing potential consumer influence on EMS development in fresh food chains 04/175*

- Supply chain dynamics
 - *Supply chain management – building partnerships 01/031*
 - *International trends in the structure of agricultural cooperatives 01/006*
 - *Evaluating logistics chain technology- Australian farmgate to port 04/188*
 - *Food processor/retailer market power in input markets – the Australian grains and oilseeds industries 05/019*
 - *Adding value - the critical factors for farmers 04/047*

- Education, skills and labour supply
 - *Managing farming – how farmers learn 99/074*
 - *Farmer education and training 98/026*
 - *Pilot study on the relationship between farmer education and good farm management 97/030*
 - *Mapping of Rural Industry Service Providers 05/044*

- Development, innovation and technology
 - *The New Crop Industries Handbook and CD (04/125) which consistently attracts tens of thousands of web site hits each month.*
 - *Global responses to GM food technology 05/016*
 - *Impact of genetic engineering on consumer demand 05/015*

- Infrastructure and rural capacity issues
 - *Small town renewal kit 01/043*
 - *E-work in regional Australia 04/045*
 - *Broadband adoption by agriculture and local government councils Australia & USA 04/127*
 - *RIRDC Rural Women's Award - the First Three Years 04/017*
 - *Women in Business in Rural and Remote Australia 04/130*

- Biosecurity and food integrity
 - *Risk and risk perception 04/043*
 - *National electronic modelling network for pest disease and weed management 02/030*

- Natural resource management
 - *Market based tools for environmental management 04/142*
 - *Australian rainman 04/181*
 - *Taxation of primary producers and landholders- improving natural resource management outcomes 04/026*
 - *Genetically modified plants – farm and resource management issues 01/108*

- Rural businesses and communities
 - *Australian values – rural policies Symposium 2000 proceedings 05/009*
 - *Land tenure and land management alternatives 03/027*
 - *Growing the capital of rural Australia – the task of capacity building 04/034*
 - *Income related loans for drought relief – repayment programs 04/053*
 - *Drought in the 1990s – Australian farm families experiences 99/014*
 - *Older farmers and retirement 05/006*
 - *Good enough never is – inspirational businesses from rural Australia 04/137*
 - *Social profile of people employed in the agriculture, forestry and fisheries industries 04/122*
 - *Costs and benefits of diversification – whole farm case studies 02/029*
 - *Country matters – social atlas of rural and regional Australia 03/015*
 - *Options for change – new ideas for Australian farmers 03/030*
 - *Impact of changing farm business structures on rural communities 02/027*
 - *Rural communities and changing farm business structures 03/126*
 - *Income related loans for drought relief – repayment projection 04/053*
 - *The rural adjustment scheme 99/019*

These reports are available at www.rirdc.gov.au .

RIRDC research outcomes provide the options for agriculture and rural Australia to capture opportunity and to adjust to a changing operating environment. They enable diversification and increased resilience in regional communities.

Examples of the RIRDC focus on resilience for Australian agriculture are:

- *Human Capital and Communication* addresses issues relating to regional communities' capacity to innovate and adjust to change.
- *Environment and Farm Management* and *Rangelands and Wildlife* focus on aspects impacting on sustainability.
- *Global Competitiveness* analyses trade policy, including the recent WTO round.
- *Global Competitiveness* is using the Dairy Adjustment Package and five other case studies to identify lessons learnt from structural adjustment.
- *Organic Systems* is canvassing concerns of organic industries; an agricultural sector with annual growth of 20% per annum recently and a retail worth of \$300M in 2004.
- *New Industries* identify a wide range of alternative agricultural options for regions under pressure.
- *Established Industries* has an acknowledged rapport with the industry sectors it serves (eg rice and chicken meat). It is recognised internationally, and is seen as apolitical, innovative and cost reducing.

RIRDC is currently scoping research programs in structural adjustment and regional development:

- Structural adjustment - developing a better understanding for government of the drivers, responses and strategic policy options. Understanding the role of industry diversification.
- Regional development – understanding the role of diversification and adjustment in regional development.

In addition, RIRDC is active across national rural issues that are priorities for industry and government:

- New models for rural investment ranging from direct investment to studies of the role of leasing in entry to farming.
- Management skills and labour supply
- Community perceptions of farming
- Sustainable resource management
- Farm health and safety
- Future science capability
- Rural adjustment
- Marketing challenges and consumer tastes
- International trading environment
- New plant products
- New animal products
- Essential oils and plant extracts
- Rare natural animal fibres
- Wildflowers and native plants
- Tea tree oil

RIRDC makes particular use of Joint Ventures for investment in cross-sectoral R&D. Our aim is to increase our use of joint ventures in the future. A joint venture partnership with RIRDC has a focus on outcomes, delivering more innovation faster. Specifically:

- coordination and delivery of a shared agenda and common interests
- longer term strategic direction and agreements (5 years)
- economies of scale for investment
- leverage of funds across partners
- cost and risk sharing
- pooling of resources
- excellence in research management through delivery of impact, capacity, and networks
- a vehicle for communication of R&D outcomes

Response to specific questions raised in Agriculture and Food Policy Issues Paper

1. Is there a need for a consistent national research and development agenda?

The 'National R&D Priorities' and 'Rural R&D priorities' provide a *de facto* framework for agricultural R&D, albeit at a very generic level. Priorities are interpreted and implemented more specifically within different industry contexts. What is missing is a mechanism for communication and coordination across these 'industry silos' to avoid R&D duplication across shared/common research interests.

The Primary Industries Standing Committee (PISC) is currently developing a national framework for agricultural R&D across jurisdictions in Australia. This should address this question fully. In particular the Discussion Paper – ‘Securing the Future for Australia’s Primary Industries: Development of a National Research, Development and Extension Framework’ canvasses issues and invites debate about the question.

However we should keep in mind that it will not be easy to develop a national framework and “one size will not fit all”. Given Australia’s huge climatic and soil type diversity agriculture in Australia itself will always be diverse, with widely differing needs and aspirations.

2. *How should this agenda be integrated with industry specific research programs with clear definitions of roles and responsibilities?*

Industry specific R&D priorities should sit within the context of any national R&D framework. At RIRDC, Industry Advisory Panels (with membership drawn from the whole value chain for that industry) undertake the integration guided by Industry 5 Year R&D Plans that align with RIRDC Corporate Plan and Government National Research Priorities (usually developed following extensive consultation with both industry specific bodies and liaison with representative bodies like the NFF). RIRDC draws on the expertise of more than 150 advisers from growers to manufacturers, exporters and marketing experts, as well as scientists and economists.

RIRDC has a goal of maximising the impact of its research and development investments. One of its strategies to achieve this goal is to apply robust investment strategies based on an “Adoption by Design” framework. Appropriate pathways to adoption are built into its program priorities, and into project design, at the outset of decisions to invest.

Key elements of RIRDC’s current investment framework are:

Portfolio Analysis

- Undertaking periodic strategic portfolio analysis at Board level to determine priorities for the allocation of discretionary funds across the RIRDC portfolio;

Sub program investment analysis

- Working closely with industry and sectoral advisory committees and panels in the determination of investment priorities at the Sub-program and project level;
- Identification of long-term research priorities at a Sub-program level through the development of Five Year R&D plans;
- Identification and publication of more specific annual research priorities;

Project selection

- Conducting an annual cycle of research applications involving preliminary and full application stages. While the call for applications is open, specific guidance is provided through the annual research priorities document, through interaction with

researchers as they develop projects, through specific requests at the preliminary and full application stages and through the commissioning of some projects;

- Project selection is on the basis of a template of criteria that test the potential benefits of the proposed investment, the research capability of the applicant, the proposed methodology and the potential adoption pathways. The expertise of the advisory committees and panels is a key input in making these judgements;
- Working closely with researchers to ensure that projects meet their stated objectives and that adoption is maximized; and

Evaluation

- Undertaking an annual program of benefit/cost evaluations.

3. Does Australia need to widen the scope for agricultural research and development to place greater emphasis on issues such as food safety, value chains, natural resource management, biosecurity and capacity building?

Most or all of these issues are firmly on the Agenda of both individual producers, value chains and industry representative bodies. Consumers have been demanding action on these issues and industry is responding.

However, Best Practice requires continuous improvement. Australia does need to widen the scope of agricultural research to cover these areas because they are all relevant to either reducing future risks to Australia's rural sector or improving our competitiveness.

Often RIRDC provides a coordination role for these issues on behalf of partners through joint ventures for shared issues of interest. Examples include rural capacity building, farm health and safety, and agroforestry.

RIRDC has a mandate for cross-sectoral issues not captured by the larger industry-specific RDCs. For example, issues to do with biosecurity, food safety, value chains, and trade policy.

4. Are the evaluation systems currently in place for assessing returns to research and development adequate and appropriate?

5. How can these be improved to ensure better value for money invested?

RIRDC attempts to evaluate on a business basis projects before it invests and tests that with retrospective studies of the Internal Rate of Return and Benefit Cost analysis of its investments. The Board reviews these studies to guide its strategic resource allocation.

So far as ex post evaluation is concerned, in 1997 RIRDC joined with the Grains Research and Development Corporation (GRDC) to develop a consistent approach for evaluation of the impact of their R&D and quantifying the rates of return on

invested funds. The result was the production of *Guidelines for the Economic Evaluation of R&D*¹.

Since then RIRDC has used the guidelines as the basis for a systematic program of evaluations. For the first four years the evaluations were conducted at the program level (Emerging Industries, Established Industries, New Plants and Animals and Future Agricultural Systems). Subsequently three Sub-programs have been evaluated (Agroforestry, Rice and New Plant Industries).

Each evaluation involves two stages:

- The first stage develops a systematic overview of all projects and a preliminary assessment of their impact. This overview is important for identifying groups of projects which make up a research effort, all of which need to be evaluated together to avoid underestimating the research costs.
- The second stage involves a detailed benefit/cost evaluation of a sample of completed projects.

The RIRDC Board has recognised the importance of reviewing its evaluation approaches and has recently agreed on a priority action to further develop the methodology and to demonstrate RIRDC's impact.

6. *What is the optimal model for the structure of research and development corporations and companies?*

We do not believe there is an optimal model.

The appropriate structure will be one which delivers the policy objectives of the PIERD (Act) which we still believe to be important, in the most effective manner for that industry or group of industries.

However common across all models will be the need to:

- Have a robust investment framework
- Actively engage with the relevant industry, and end-users of the R&D, with regard to setting priorities, allocating resources and designing R&D
- Include 'adoption' in the R&D planning phase
- Design mechanisms to communicate R&D impacts
- Provide a means for effective coordination and dealing with cross-sectoral issues

So far as governance arrangements are concerned the current statutory authority model involving an expertise based Board with the full power to act, remains the most effective means of managing R&D investment and managing the multiple accountabilities of industry, government and the community.

¹ Centre for International Economics, 1997, *Guidelines for Economic Evaluation of R&D*, GRDC, Canberra.

7. *How can research and development provision be made more responsive and relevant to industry?*

RIRDC considers that the combination of an expert independent Board, and industry expert Advisory Committees is a highly responsive and relevant approach. In RIRDC, end-users shape the Five Year R&D Plan and assess which projects will best implement it.

Industry needs to see a clear value proposition in its research and development investment. It needs tangible benefits such as:

- Innovations that improve their profits and/or resource management
- More than doubling their research investment through government matching
- A record of success in turning R&D into results for industry
- Professional research management maximising results for industry
- Being part of partnerships in 'adoption' with R&D providers
- Priority research needs being identified and tackled

It is a strategic industry approach with outstanding industry support.

8. *What opportunities exist for rationalising Australia's research and development infrastructure?*

This is a serious issue for primary industry R&D with research centres being closed in many parts of Australia in universities and state government agencies.

Over the last decade various State Departments of Primary Industries across Australia have established alliances with local universities; with a view to rationalising resources and building-on existing expertise to develop Centres of Excellence. This is usually on a discipline basis.

The PISC National Framework for R&D currently being developed should canvass further options in this area. However some successful models currently exist. Amongst R&D providers 'Centres of Excellence' enable sharing of infrastructure and human capital. Joint ventures allow partners investing in R&D various benefits (described previously). In addition, Cooperative Research Centres provide a vehicle for partnerships between government and industry.

The key issues are

- critical mass (human and infrastructure) for effective R&D delivery,
- maintenance of scientific capability across a range of disciplines, and
- effective pathways to adoption.

9. *Is there sufficient understanding of the drivers of adoption and how can this be improved?*

It has been our experience that primary producers are thirsty for new ideas and means of diversification. As well they are looking for better, more environmentally friendly ways of producing their products. This is matched by the ceaseless search by food and fibre producers for new technology to match ever-changing and to an extent fashion-driven styles of food and fibre.

However we can always do better and this has been the reason we established a project the 'Cooperative Venture for Capacity Building' (CVCB). The CVCB aims to give all primary producers the opportunity and skills to obtain the information and education needed to embrace innovation. It is a cross-industry and cross-sectoral partnership between involving eight R&D Corporations, DAFFA and the MDBC.

Relevant reports, covering the adoption process and how it may be improved, include:

- Fostering Involvement – how to improve participation in learning
- Agribusiness Role in Extension, Education and Training
- Extension for Capacity Building
- Mapping of Rural Industry Service Providers

10. *How important is technology adoption to the variation in productivity growth between and within agricultural industries?*

It is important to note that most rural industries have undergone quite striking productivity growth over a long period, when compared with other countries and other sectors of the economy, as discussed in the recent Productivity Commission Report.

However this issue is not well analysed and would be a good project to commission through the RIRDC managed Cooperative Venture for Capacity Building. RIRDC is currently considering investment in a project examining productivity growth in various rural industries.

11. *What are the tradeoffs in determining an optimal balance between the privatisation of the benefits from research and maximising its uptake by making results freely available?*

RIRDC's strong focus is on adoption of high quality research. We view commercialization as one means to maximise adoption and pursue it when it will achieve that objective. RIRDC uses ten principles to decide when commercialisation of research is an option which are:

- RIRDC will commercialize research outputs where this provides the greatest benefits to its stakeholders. In all other cases research outputs will be placed in the public domain.
- RIRDC will own a share of the IP in all projects in which it invests commensurate with the level of its investment.
- Commercialization will be implemented when it provides faster, more sustainable or more practical avenue for making new products, processes and services available to RIRDC's primary stakeholders.
- The primary objective of commercialization is not to raise funds for RIRDC. Rather RIRDC's goal is to maximize the uptake and benefits flowing from its investments in rural research. The aim is to make new technologies available to stakeholders as quickly and as cost-effectively as possible.
- Research must be managed on the basis that it *may* generate valuable intellectual property. That is, appropriate arrangements need to be made to ensure that the research is placed in a format so that it is *capable* of being protected
- RIRDC will only be directly involved in the commercialization of research itself in exceptional circumstances. RIRDC recognizes that private sector organizations are better placed to commercialize intellectual property than RIRDC.
- Decisions about the terms under which the commercialization will proceed will be made on a case by case basis, drawing on the principles set out here.
- When commercialization is identified as the appropriate adoption mechanism prior to the execution of a Research Agreement, a process to define a strategy, a lead agent and a timetable for commercialization will be included in the Research Agreement.
- RIRDC undertakes to ensure that all staff who may be involved in the creation, identification, protection or management of intellectual property are properly trained.
- RIRDC will ensure that its research partners have adequate intellectual property policies in place and that their staff have been properly trained.