



Australian Government

**Rural Industries Research and
Development Corporation**

Organic Industry Research and Development Plan

2006-2011

August 2006

RIRDC Publication No 06/103
RIRDC Project No BIU-1A

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ISBN 1 74151 366 9

ISSN 1440-6845

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Published in August 2006

Printed on environmentally friendly paper by Union Offset

Foreword

This plan builds on RIRDC's two previous five-year investment programs for the Organic Systems Program. It has been developed to meet the Australian organic industry's R&D needs as a part of this rapidly growing global food sector, estimated to be worth A\$33 billion in 2003 with forecast annual growth rates between 10-30%. Asia and North America have enjoyed sustained annual growth in recent years of between 20-45%. The Australian organic sector was estimated to be worth A\$400 million in 2005. Production in Australia has been increasing between 6-15% pa whereas consumption is growing at 25-40%. The balance is imported.

The 2006-2011 Plan identifies three key objectives for the R&D investments focussed on farming systems, supply chain issues, and the agro-ecological performance of organic farming systems. Associated with these objectives are two key strategies, the *Australian Organic Hub*, a virtual centre where knowledge is sourced, assessed and transformed into user-friendly information packages and knowledge gaps identified, and the *Organic Industry Research Program*, which will focus on the research needs of identified priority sectors; grains, dairy, horticulture and meat. A set of performance indicators will guide assessment of the program as it progresses.

A key feature of the 2006-2011 plan is that it seeks co-investment in its program of activities. Organic food and farming systems are a growing component of all commodity and food sectors. Co-investment will be sought from these sectors. Collaboration in all aspects of the program will also be sought from end-users, researchers and investors.

The 2006-2011 plan will be implemented in partnership with the industry's peak body, the Organic Federation of Australia (OFA). Preparation of the plan has occurred in parallel with a Department of Agriculture, Fisheries and Forestry project under the Industry Partnership Program which is working to establish the structures necessary to support the growth of the organic industry. The OFA re-structure in 2005 was an outcome of this project. The new OFA has identified research and development (R&D) as a key platform for the organic industry's future.

The 2006-2011 Plan was developed under the guidance of the RIRDC Organic Systems R&D Advisory Committee. The plan received input from conventional and organic agriculture, organic supply chain participants, researchers and food and agriculture investors. The plan took into account the key insights from the 2004 Organic Food and Farming Technologies Cooperative Research Centre bid. The process involved stakeholder consultations, an investor workshop and a feedback session with the RIRDC Advisory Committee. Assessment of past plans and their impact was also conducted.

The Plan is consistent with the RIRDC Corporate Plan (2003-2008) and Australian Government Rural Research Priorities. The R&D Plan will be implemented in accordance with the provisions of the *Primary Industries and Energy Research and Development Act 1989*.

Peter O'Brien

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Chairperson
Organic Systems R&D Advisor Committee

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R&D Priorities at a glance

Organic demand is currently outstripping supply. Production in Australia has been increasing at between 6 -15% pa whereas consumption is growing at between 25-40% pa (depending on the sector). The balance is imported. Although Australia is one of the world's leading grain exporters organic grains are imported to meet the shortfall in local production.

Goal

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

Objectives

The research objectives of the program in order of priority are to:

1. Improve organic farming system performance
2. Address supply chain and food safety issues and technical barriers
3. Assess agro-ecological performance of organic farming systems

These objectives provide the boundaries for the Organic Systems R&D Program over the next five years. Each objective is addressed from two perspectives, as outlined in the two major inter-linked strategies below.

Strategies

Australian Organic Hub

- Synthesise conventional farming system and supply chain/ food safety knowledge for potential application within the organic industry, with sector Research and Development Corporations (RDCs) and relevant research providers, and identify organic “add-ons” to existing RDC projects and programs. (15% of Budget)

Key performance indicators:

- Knowledge mapped from conventional agricultural research to define what can immediately be adopted by the organic industry to facilitate the development of extension packages.
 - Extension packages developed for organic industry based on conventional agriculture.
 - Knowledge gaps identified where investment from the RIRDC Organic Systems Program (to research funded by other commodity RDCs) will ensure that future research meets the needs of both organic and conventional sectors.
- Synthesise organic systems and supply chain/ food safety knowledge into user friendly packages and tools for dissemination via existing organic industry networks. The Hub will also identify knowledge gaps to inform Sector Research Plans for grains, dairy, horticulture and meat. (20% of Budget)

Key performance indicators:

- Knowledge of Australian organic systems synthesised into user-friendly packages and tools for the Australian organic industry.
 - Knowledge gaps identified to inform Sector Research Plans.
- Communicate the scientific case for organics. (5% of Budget)

Key performance indicators:

- Number of proceedings of RIRDC organic workshops published, e.g., phosphorus (P) workshop.
- Number of ‘information packages’ (e.g. AgFacts) for the organic industry prepared by scientists.
- Number of papers in reputable journals and conference proceedings from RIRDC-funded research.
- Number of organic research citations in Citation Indexes.

Organic Industry Research program

- Finalise and implement organic Sector Research Plans for the grains, dairy, horticulture and meat sectors. (30% of Budget)

Key performance indicators:

- Research program established to address the main constraints to conversion of farms to organic production - cost and perceived risks of conversion, lack of relevant and practical information, inputs and control strategies, product quality and consistency of supply.
 - Supply chain/ food safety issues identified and prioritised that are amenable to R&D.
 - International collaborations proactively developed and maintained.
 - International best practice translated into the Australian context.
- Incorporate organic objectives in key areas of research for conventional agriculture, including plant variety testing on organic farms, development of plant-based biocides, and soil-P management in the absence of inputs of soluble P fertilizer. (12% of Budget)

Key performance indicators:

- Evaluation of crop varieties for organic production incorporated into all major plant breeding programs.
 - Co-investment secured for a program of research aimed at managing soil phosphorus without inputs of soluble P fertilizer.
 - Co-investment secured into the development of novel plant-based biocides of importance to organic and conventional agriculture.
- Adapt research outcomes from conventional farms to organic farms. (12% of Budget)

Key performance indicators:

- Experimental programs commenced on organic farms in key areas of weed management and non-chemical control of internal parasites in animals.

- Develop indicators for agro-ecological assessment of organic farming systems. (6% of Budget)

Key performance indicators:

- Key indicators of system performance utilised, to allow for scientific comparison of the performance of integrated farming systems.
- Co-investment secured to establish the relative sustainability of alternative approaches to agriculture, at landscape scale.

In addition there are generic key performance indicators for the Plan as a whole as follows.

Successful implementation of the new Organic R&D plan:

- \$ investment in Australian organic R&D
- % of Australian organic R&D investment from non-RIRDC sources
- Sector Research Plans endorsed by the organic industry
- Extent membership levels/fees increased for Biological Farmers Australia (BFA) and National Association for Sustainable Agriculture Australia (NASAA)
- Number of scientists actively involved in Australian organic R&D
- Number of postgraduate students involved in Australian organic R&D
- Number of dissemination channels of the Australian Organic Hub
- Number of knowledge providers/partners for the Australian Organic Hub

Outputs from Organic R&D Plan 2006-2011:

- Number and value of potential improvements to organic systems productivity
- Number and value of potential improvements in organic product quality, safety and consistency of supply
- Number of Australian Organic Hub products
- Industry survey of relevance and awareness of the Research Program and Australian Organic Hub (annual)
- Industry participation and use of the Australian Organic Hub
- Number of PhD students sponsored by the program still associated with the industry

Impacts of Organic R&D plan 2006-2011:

- % of productivity improvement strategies implemented and their impact
- % of product quality, safety and consistency strategies implemented and their impact
- Cost benefit assessment of program activities
- International recognition of Australian organic R&D capability

1. Introduction

The Australian Organic Industry is at a turning point in its development, evolving into an industry in its own right from a fragmented broad base of industry participants. It is a rapidly growing industry, differing in many ways from other traditional agri-food industries. It is supply not demand constrained, is cross-commodity not commodity specific and is founded on a systems-based approach of delivering food products to market without reliance on artificial inputs. Despite its differences to conventional agriculture, its knowledge and practices have the potential to contribute positively to the challenges facing conventional agriculture and food supply, in particular to improve on-farm sustainability (through improved soil health) and reduction of chemical use throughout the food supply chain. Achieving widespread adoption of such practices also aligns with National Research Priorities for an environmentally sustainable Australia and development of preventative health strategies through diet.

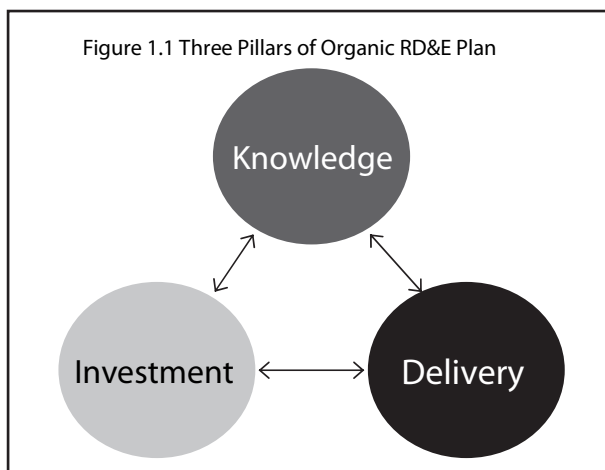
RIRDC has invested in organic R&D since 1995. It has been the major Australian investor in the area, however its investment (up to \$300,000 pa) is small by conventional agricultural and international organic industry standards. RIRDC’s investment to date has made a significant contribution to development of Australia’s organic industry. However, there is scope to increase investment in scientific and technological issues to accelerate more profitable and sustainable growth of the industry and individual organic businesses. In particular there is a need to increase the rate of adoption of current organic systems knowledge, improve the interactions between organic and conventional agricultural R&D and facilitate broader co-investment in organic industry research.

Basis for Plan

This plan is RIRDC’s third five-year organic industry R&D plan to be implemented in partnership with the industry peak body, the Organic Federation of Australia (OFA). The OFA was restructured in 2005 and during this restructure identified research as a key industry priority. The OFA has worked in partnership with RIRDC to develop this plan.

The plan addresses three fundamental pillars (see Figure 1.1).

Knowledge – What knowledge is required to achieve the desired industry outcomes? Where is that knowledge available? What research needs to be undertaken to address gaps in the current knowledge base?

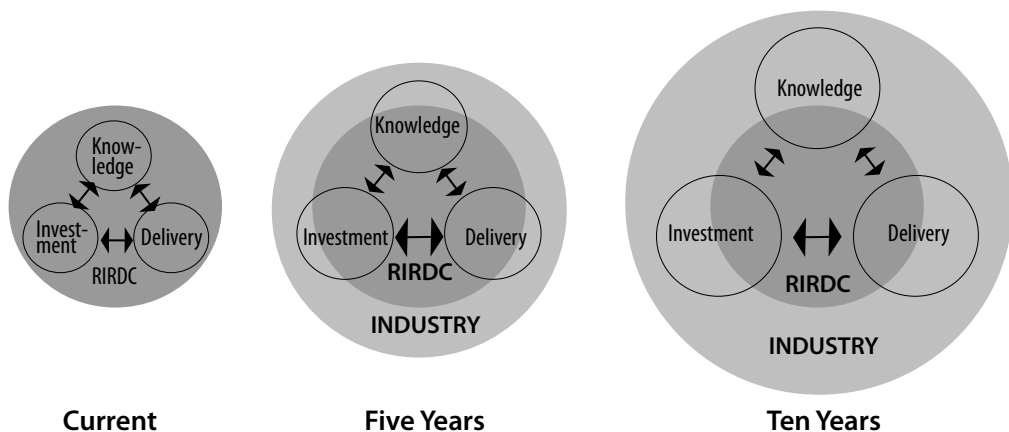


Investment - What resources are required to deliver the plan? Who are the potential investors in the program? What processes and structures are required to secure their investment?

Delivery - What processes and structures need to be put in place to deliver the plan? How does new and existing knowledge get translated into industry outcomes?

For many reasons, reflecting its stage of development and reliance on many small businesses, the organic industry is limited in its capacity to invest cash directly in R&D. RIRDC must therefore play a key, but evolving, role to invest in R&D strategically on behalf of the industry. This plan in particular aims to grow investment in organic industry R&D from other sources and utilise RIRDC's investment as a catalyst for growth in Australian science to underpin organic agriculture. The changing role of RIRDC is presented in Figure 1.2. The RIRDC Organic Program is the nucleus around which the Australian Organic Industry's R&D Plan will develop and RIRDC's role will evolve from being the leader to that of a core co-investor.

Figure 1.2 Evolution of RIRDC Role:
From industry leader to research co-investor



Plan Development

The process used to develop the plan is presented in Figure 1.3 and has been “top down”, starting from an understanding of business drivers for Australia’s organic industry. Strategic imperatives arising from these are addressed within the constraints of the role of RIRDC, the resources available and the state of development of the industry.

Much preliminary work for the plan’s development was undertaken in the formulation of a 2004 application for a Cooperative Research Centre for Organic Food and Farming Technologies. Its continuing relevance was confirmed during this plan’s development. The CRC’s research was to be delivered

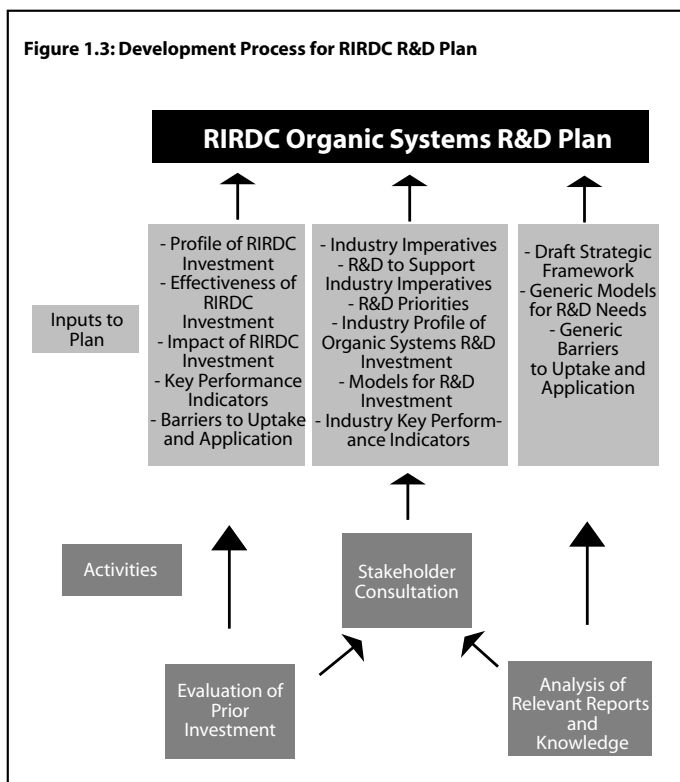
through five integrated research, development, extension and education programs. An Organic Farming Systems research program was the cornerstone of the proposal. A key element of the success of organic systems, soil health, was a separate program – Improving Soils for Organic Food Supply and it was proposed to support these by a supply chain program – Organic Food Quality and Supply Technologies.

In recognition of the diversity and complexity of the “organic industry”, an extensive stakeholder consultation process was undertaken. Organic industry stakeholder groups were identified along the supply chain (see Figure 1.4) and representatives of the groups consulted by a number of methods:

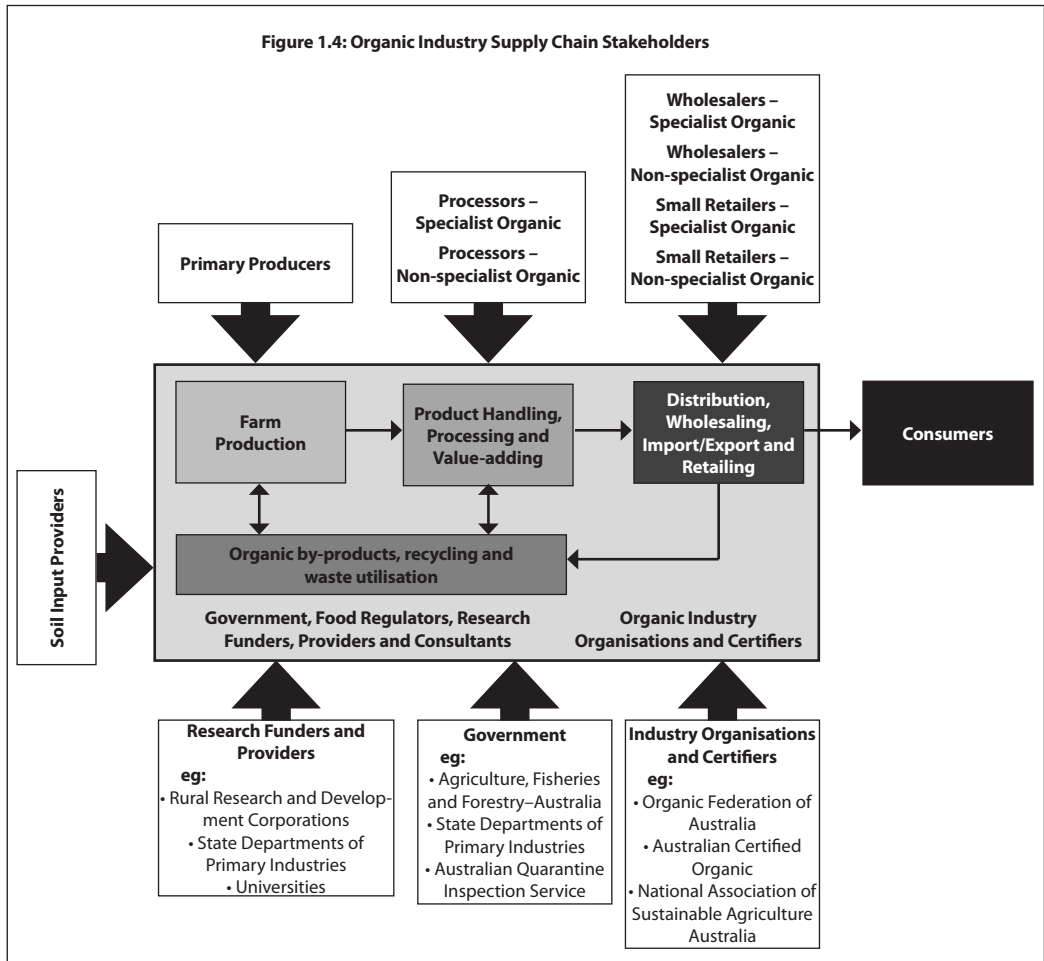
- A discussion paper was developed and circulated and face to face or telephone interviews conducted.
- An industry / research investor workshop was held in Melbourne in October 2005.
- The draft plan was presented to the RIRDC Organic Systems R&D Advisory Committee and other key stakeholders and a further round of telephone interviews held to seek feedback.

A strategic review of the research and development projects funded since the RIRDC Organic Program was established in 1995 was completed (see Section 5). The new plan aims to take advantage of the emerging integration of Australia’s organic industry and address weaknesses of prior plans, in particular in:

- the dissemination, uptake and impact of research outputs on the industry,



- the large disconnect between organic research investment and conventional agriculture research investment.
- increasing the scale of projects through targeted private and public sector co-investment.



2. Australian Organic Industry Profile

Organic Industry Structure

Australia's organic industry is diverse and involves stakeholders through and across a range of supply chains. It encompasses the production and delivery to market of "commodity" products through to complex processed foods. Integrity of the industry is maintained through robust certification processes that are internationally recognised. The industry is experiencing rapid growth driven by consumer demand for products that are perceived to be clean, green and natural.

The industry is in transition from a fragmented sector to an industry in its own right. The industry has been working with the Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF) under the Industry Partnership Program to establish the structures necessary to support the growth of the industry. As already noted the OFA has been restructured to be the industry peak body. The three top priorities for the OFA and the organic industry are (Hassall & Associates 2005¹):

- Sustainable funding of the OFA
- Research and development
- Organic standards

The performance of the OFA over the next 2 years will be critical to the development of the industry and it faces many challenges in meeting the expectations of those within and outside the industry. The collaborative approach between RIRDC and the OFA which underpins this plan represents a unique opportunity to establish R&D as a key driver of future growth and innovation for the industry.

Characteristics of Organic Industry

Characteristics of the organic industry that are important in identifying its research needs are:

Farming Systems

- The foundation of the industry is the application of a holistic systems approach to management of primary production as opposed to the emphasis on reductionist approaches that characterise conventional agriculture. The increasing importance of systems science to conventional agriculture, along with the adoption of new practices by organic farmers, is leading to a gradual convergence of organic and conventional agriculture.
- The organic industry is farming system based and therefore encompasses all primary product/ commodity groups. Because of this it is considerably broader and involves a far greater diversity of interests than a traditional single commodity based industry.
- Organic practices and know-how have the potential for flow on application in conventional agriculture and food production delivering benefits such as reduced chemical dependence and improved soil health.

¹ Organics Industry Roundtable 29/7/05 Discussion Paper, Hassall & Associates 2005

Market Driven Opportunity

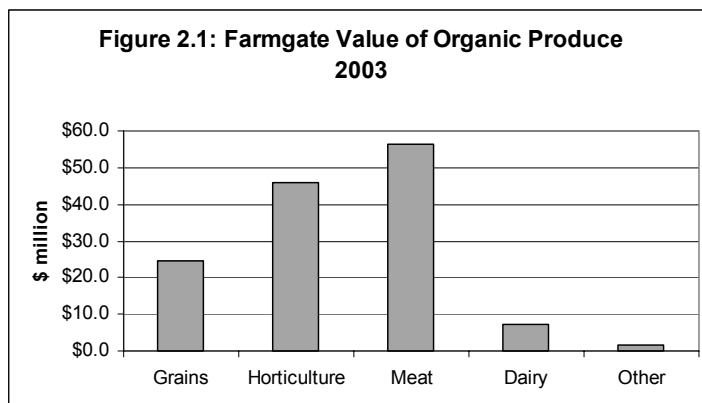
- Organic products are the fastest growing food sector in the world. In the last 10 years the rate of growth has consistently increased in all of the advanced economies. Market analysts forecast annual growth rates between 10% and 30% around the world. Asia and North America are enjoying a sustained annual growth of between 20-45%.
- Major food industry corporations are becoming the drivers of market growth. These include manufacturers (eg General Mills, Kraft, Dean Foods, Groupe Danone), retailers (eg Wal-Mart, Sainsbury, Tesco, Coles) and fast-food chains (McDonalds).
- Demand is currently outstripping supply. Production in Australia has been increasing at between 6 -15% pa whereas consumption is growing at between 25-40% pa (depending on the sector). The balance is imported. Although Australia is one of the worlds leading grain exporters organic grains are imported to meet the shortfall in local production.

Scale

- Australia is a small player in the global organic food market which was estimated to have a value of A\$33 billion in 2003 (Willer and Yussefi, 2005²). The Australian domestic market retail value, estimated to be A\$400 million in 2005 (Andre Leu, personal communication), is less than 1% of the global market.
- The organic industry is also a small player in the agricultural scene in Australia. Within the sectors in which the organic industry is concentrated (grains, horticulture, meat and dairy) organic produce corresponds to approx 0.5% of the farmgate value of produce. The organic industry is viewed as a minor, if not irrelevant, element of the overall industry by conventional agriculture. Furthermore, conventional agriculture is limited in its understanding of the science underpinning organic agriculture and prejudiced in its views of the “organic industry”. The research / investor workshop, undertaken as part of this plan’s development, was the first attempt at breaking down these barriers and has initiated better dialogue between organic and conventional organic research investors.

Commodity Sector Significance

- The farmgate value of produce in 2003 broken down by commodity grouping is presented in Figure 2.1 (Halpin 2004³).
- A lack of consistent data combined with the impact of drought makes



² The World of Organic Agriculture 2005 - Statistics and Emerging Trends, H Willer M Yussefi IFOAM 2005

³ The Australian Organic Industry – A profile, D. Halpin DAFF 2004

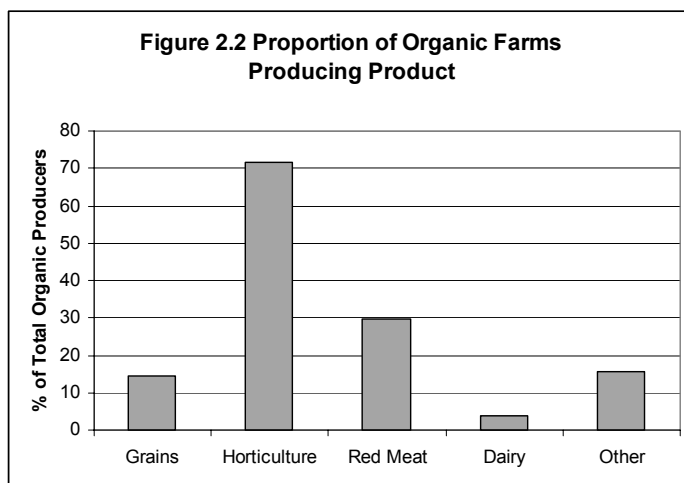
accurate industry growth data difficult to obtain. Comparison of the 2003 Halpin data with earlier FY 2000-01 data from Wynen⁴ suggests that horticulture and dairy have experienced growth above 30% pa during this period, while meat was greater than 20%. Note that not all organically produced produce is sold into organic supply chains.

- The proportion of producers involved in different sectors of the industry is presented in Figure 2.2. Note that the total percentage exceeds 100% because a number of producers are involved in more than one sector.

Barriers to growth

- The slow rate of conversion to certified organic farming practices. Farm conversion is perceived as being high risk as it involves the adoption of new management practices and a significantly reduced arsenal of pest, disease and weed protection and fertiliser inputs. The level of risk and hence the degree of barrier is very sector and environment dependent.

- Poor supply chain integration. The regular and consistent supply of quality organic produce is essential if fresh and processed Australian organic food is to become widely available to the Australian public, and if export potential is to be realised. Food processors, retailers and exporters do not have an assured basis on which to invest in the development of new infrastructure, supply chains and product development.



People / Businesses

- The Australian organic industry consists largely of independent organic farmers, “dedicated-organic” small to medium sized businesses (including certifiers and retailers) and a number of non-organic specific businesses, including some large national and multinational companies, that have organics as part of their portfolio. Typically organic businesses play an important role in the development of their sectors with many taking significant risk and leadership in order to bring new organic products to market.
- In broad terms the industry has attracted two distinct groups of participants – the “true believers” whose involvement with the industry is often associated with a life-style choice, and the “market opportunists” who are in the industry because of the business

⁴ Organic Agriculture in Australia – Levies and Expenditure, E Wynen RIRDC Report 03/002 2003

opportunities offered by the growing market for organic products. As a consequence the scale of operations and approach to innovation and change vary considerably across the industry.

- With a few exceptions, predominantly in horticulture, organic producers have not been influential in agri-political circles and have not been engaged in conventional agriculture research funding systems. In the short term there is still a need for RIRDC to invest in organic specific needs and play a leadership role in improving the dialogue and understanding between organic and conventional agriculture.

Supply chain context

- Although the organic industry is at an early stage of its development, it cannot be viewed in isolation from the food industry as a whole, which is a mature, sophisticated, highly integrated industry sector. The organic industry must be viewed within supply chain contexts – both as commodity chains and cross-sector chains for complex food production.
- The industry is subject to the same economic pressures and trends being experienced by conventional agriculture. As with conventional agriculture sustainable gains in productivity are required to underpin long term viability as pressure is applied by other supply chain players (eg retailers).

Biosecurity

- The outbreak of serious or exotic diseases, weeds and pests can have major implications for organic agricultural systems. These are:
 - loss of market access due to treatment/phytosanitary protocols using substances that are prohibited under organic standards
 - loss of organic certification due to treatment/phytosanitary protocols for eradication, on farm, using substances that are prohibited under organic standards
 - organic farms not participating in eradication/control campaigns being seen as hosts and reservoirs for the weed/pest/disease.
- It is critical that organic farmers participate in eradication campaigns. This requires that substances and processes allowed under organic standards be adopted as part of any eradication or market access protocol.

Certification

- Certification is the cornerstone of the global organic industry. The entire supply chain from paddock to retail must conform to organic standards that define what constitutes organic production, processing, distribution and retail.
- International organic standards have been largely based upon European farming conditions and as a result the existing Australian National Standard for exports (and also used as the basis for a variety of domestic certification processes by various organic certifiers) does not reflect the reality of Australian ecosystems and can be a barrier to sustainable organic production in Australia and access to export markets.

Perceptions of the Organic Industry

The perception of organics varies widely.

- Retailers (both mainstream and specialists) view organics very positively and as an opportunity for growth. Lack of consistent, good quality supply in Australia however is constraining their growth and lack of confidence in Australian supply chains is seeing growth targets being met through imports.
- Mainstream agriculture's view is largely negative. The sector is either seen as so small it doesn't deserve consideration, or it is seen as a threat because its practices are not understood or don't meet conventional expectations.
- The research community is largely negative as the industry is perceived to be unscientific, often resorting to the use of emotive arguments to influence public opinion.

Organic Industry Research and Development ***Global Organic Research Investment***

There has been exponential growth in global research related to organic systems in the last 10 years, with an estimated value of organic research programs within Europe of approx \$120 million pa (Niggli 2004⁵). With limited funds for research the Australian organic industry must strategically access and learn from international knowledge and experience. Key strategic considerations for access are the relevance of the research to the Australian industry and the potential accessibility that the industry will have to the research outcomes. A preliminary screening of international research activity shows that:

- In areas such as Organic Foods Quality and Supply Technologies there is a wealth of relevant information readily available in the public domain. This information could be translated into the Australian context with minimal effort.
- In areas such as Organic Farming Systems and Improving Soils for Organic Foods Supply, there is high quality strategic research being undertaken that could be used to the benefit of Australian farming systems.
- Strategic and focused collaboration with international research programs has the potential to provide a resource effective pathway to achieving significant industry impact.

Australian Conventional Agriculture Research Investment

Similarly, the organic industry can learn from conventional knowledge where the value of research programs funded by the Grains Research and Development Corporation (GRDC), Horticulture Australia Ltd (HAL), Meat and Livestock Australia (MLA) and Dairy Australia (DA) in 2004-05 was approx \$260 million.

When considering conventional agricultural research in supporting innovation within the Australian organic industry, the key factor is the applicability of the research to organic systems, as access to the information is unlikely to be a barrier. Of particular importance is fundamental or underpinning science that builds understanding of system behaviour, along with scientific approaches and procedures not explored by the organic sector. Preliminary feedback

⁵ Personal Communication, U Niggli 2004

gathered during the consultation process in developing this plan indicated that areas likely to be relevant to the organic industry include:

- integrated pest, weed and disease management programs.
- conventional genetic improvement programs (excluding genetic engineering)
- soil health and soil biology
- impact of regional soil and climatic variations on integrated farming systems

It is likely that strategic and focused screening of Research and Development Corporation (RDC) and relevant scientific program outcomes could benefit both organic and conventional agriculture. This plan therefore aims to increase the strategic use of RIRDC investment to attract co-investment in organic industry research by the major investors in Australian agricultural research. To realise co-investment there is a need for:

- detailed and quantifiable analysis of technological barriers to organic industry growth, profitability and sustainability on a sector basis (for implementing organic Sector Research Plans) and,
- cost benefit analysis on specific projects to support the business case for investment by other RDCs.

3. Key Challenges for Australia's Organic Industry

Organic Industry Business Drivers

The high level business needs that underpin the R&D plan are:

- increased productivity,
- increased robustness and flexibility in the farming systems employed, and
- improved quality and consistency of supply.

Additional organic industry drivers also considered are:

- capacity to grow certified organic supply to match demand
- the strengths of organic systems and the safety of the products they produce need to be widely recognised within the farming, scientific and agri-food communities.

Organic Industry SWOT Analysis

A SWOT analysis of Organic Industry from an R&D perspective is presented in Table 3.1.

Strategic Imperatives for Organic R&D

Based on the business drivers and SWOT analysis the following strategic imperatives for the R&D plan are:

- Deliver measurable impacts from organic R&D that contribute to the profitability of organic businesses and growth in production and sales of Australian organic products.
- Increase the scale of investment, and number of investors in Australian organic R&D.
- Build a sound Australian research capacity in organic systems capable of growing and evolving with the industry that is focused on the generation of Australian specific new knowledge.
- Establish a focal point for organic systems knowledge flow that promotes the uptake of relevant knowledge by organic practitioners.
- Enhance the credibility and reputation of the organic industry within mainstream agri-food communities, and break-down the barriers between the organic industry and conventional agricultural research.
- Accelerate the development of the organic industry's capability to define, direct and manage its R&D strategically in line with industry development goals.

Table 3.1 Organic Industry Related SWOT Analysis

| | |
|---|--|
| <p>Strengths</p> <ul style="list-style-type: none"> • OFA established as peak industry body • Well established, credible certification systems • Research recognised as key driver for industry success • Demonstrated willingness to invest in R&D • Industry has many innovative highly committed practitioners • Well established industry information dissemination networks • Industry development role played by RIRDC is widely recognised | <p>Opportunities</p> <ul style="list-style-type: none"> • Positive market perception of organic produce • Large pool of international research and expertise in organic farming systems • Large pool of conventional agricultural science and knowledge not explored by organic sector • Well established high calibre conventional agriculture R&D infrastructure available within Australia • Significant potential for adoption of organic practices within conventional agriculture |
| <p>Weaknesses</p> <ul style="list-style-type: none"> • Industry diversity – cross sectoral and across multiple supply chains • Industry is small in terms of both Australian agriculture and international organic industry • Current organic industry R&D investment is small scale and widely dispersed • Current organic industry R&D investment is ad hoc because previous R&D Plans were too broad relative to resources available for investment • Current R&D is not perceived to have delivered knowledge based outcomes for industry. • No well developed or shared view in the industry of what R&D is, what it can enable, or how to manage it. • No established or clearly defined pathway to deliver industry benefits from research investment. • No focal point for organic industry knowledge management. • Organic industry is largely isolated from mainstream agricultural research. | <p>Threats</p> <ul style="list-style-type: none"> • Organic farming systems viewed negatively by conventional agriculture • Organic industry too small to justify serious consideration by commodity RDCs while their expectations for investment are becoming increasingly business outcome driven. • Convergence of organic and conventional farming systems leading to loss of organic identity and markets • Science of organic farming systems not understood or taken seriously by majority of agricultural research scientists • Significant food safety incident associated with organic foods |

4. Industry Commitment

This plan has been developed in partnership with the industry peak body (OFA). The OFA is committed to the implementation of the plan and will support implementation with significant in-kind involvement of people, provision of knowledge and access to its industry networks. The OFA does not have a levy based funding stream and is not in a position to directly commit industry funds for research.

The development of this plan, and the earlier CRC application, identified a range of potential private and public sector co-investors in organic R&D with RIRDC. Implementation of this plan will aim to secure these and other similar investments.

Levies

The organic industry is contributing research levies to other Research and Development Corporations (RDCs) eg MLA, GRDC, HAL, DA, GWRDC. The research levies are matched with Federal Government funding to a maximum of 0.5% of farm-gate value. These funds are invested in research that may have value for organic producers, however, they are not currently invested in a targeted or strategic manner that maximises their value to the organic industry. There is no evidence that any attempt has been made to promote extension of these outcomes to the organic industry.

Table 4.1 Value of levies + matched funds

| Organic Produce | |
|--|-------------|
| Estd Research Levies + Matching Funds | |
| FY 00/01 | \$650,000 |
| FY 03/04 | \$950,000 |
| FY 06/07 | \$1,250,000 |
| Commodity Split of Levies | |
| Horticulture | 40% |
| Grains | 32% |
| Meat | 16% |
| Dairy | 12% |

Wynen 2003⁶ estimated the value of research levies plus matching government funds for the Financial Year (FY) 2000-01. This data has been scaled to the FY 2003-04 based on more recent production data (Halpin 2004). It has then been projected to FY 2006-07 based on observed growth rates. The results are summarised in Table 4.1

The plan aims to bridge the gap between organic and conventional agriculture and seek co-investment in projects where organic research will also benefit conventional agriculture and improve awareness and uptake by conventional agriculture of the science and practices underpinning organic farming.

At the time of development of this plan there is no plan for an organic levy for funding research and it is unlikely that a levy will be in place within the next three years. The plan has therefore been developed assuming that direct levy funds are not available.

⁶ Organic Agriculture in Australia - Levies and Expenditure, E. Wynen RIRDC Report 03/002 2003

Advisory Committee

A skills based Organic Industry R&D Advisory Committee will support RIRDC in the implementation of the plan with responsibilities that include:

- Ensuring the outputs of activities are made readily available to appropriate end-users.
- Advising RIRDC and the OFA on communication strategies to create mainstream support for the organic industry.
- Review and make recommendations on the investment in project proposals received by the RIRDC annual call for submissions, with recommendations based on alignment with the priorities of this plan and its revised annual plans.
- Commissioning research where necessary to meet strategic objectives.
- Ensuring the finalisation and implementation of organic Sector Research Plans.
- Communicating expectations, through appropriate avenues to R&D providers, for high quality organic research.

5. Research Directions

RIRDC Research Investment 1995-2005

Since 1995, RIRDC has been the major research investor to support the development of Australia's organic industry. RIRDC has also played a key role in nurturing industry development.

Characteristics of RIRDC's investment in organic research include:

- RIRDC has invested just over \$2.25m in its organic research program, funding approximately 130 projects in total. The investment in 2003-04 and 2004-05 has averaged just over \$200,000 per annum.
- A significant number of projects have been small investments (85 projects <\$10,000) often with an industry development / capability development focus. Funding of small projects has reduced dramatically in the last three years.
- Five projects had an investment exceeding \$100,000 over the life of the project.
- The 2001-2006 five year plan identified five areas with the allocation of funds as presented in Table 5.1.

Table 5.1 2001-2006 Five Year Plan

| Program Area | Target % of Funds | Actual % of Funds |
|--|-------------------|-------------------|
| Organic Production Systems | 40% | 54% |
| Conversion Processes | 25% | 5% |
| Regulation, Validation and Market Access | 10% | 0.5% |
| Supply Chain Management and Intelligence | 10% | 7% |
| Communication and Facilitation | 15% | 33.5% |
| TOTAL | 100% | 100% |

- The breadth of the program limited the depth of investment in any one area.
- The program has been based almost entirely on research organisation responses to an open call for submissions. In general terms the R&D investment to date has been dominated by applied research and extension projects.
- The program to date has been constrained by a dis-connect between resource inputs and desired outcomes.
- Feedback from the consultations indicates broad and positive support for the industry development outcomes that have resulted from the program. These range from high level industry outcomes such as bringing the industry together and providing a forum for discussion, to specific R&D related outcomes which include the strong acceptance in the industry of the importance of R&D to the future development of the industry.
- Industry capability building has been an important aspect of the many small projects. This has contributed to the positive view of the industry development outcomes from the

program noted above. To date the RIRDC PhD Scholarships Program has not been a significant aspect of the program with only one PhD Scholarship being awarded to a project relevant to the organic industry. However, in recent years three PhDs have been funded through project funded by the Organic Systems program.

RIRDC R&D Priorities 2006 - 2011

The breadth of areas for potential investment requires prioritisation to focus RIRDC's investment. The plan is prioritised in three dimensions:

- Knowledge required,
- Commodity sector(s) to which the knowledge will apply, and
- Knowledge related activity to be undertaken.

Priority Knowledge

Improving Organic Farming System Performance

Farming system performance has been, and will continue to be, the core element of the research program. The objectives are:

- Removing the barriers to conversion
- Increasing productivity, and
- Improving product quality and consistency of supply.

To achieve these objectives two principal outcomes have been identified as **high priorities**:

- Improving soil health for Australian organic farming systems.

The foundation of organic agriculture is healthy soil. Organic farming practices aim to increase soil humus and thus encourage increased biological activity within the soil. This in turn provides optimum growing conditions for crops by providing optimum soil structure, water holding capacity and nutrient release.

Australian soils are inherently low in organic matter and humus. As a consequence there is a need for improved organic soil management techniques which maintain and improve soil health and structure, and thereby increase crop and livestock productivity and product quality and consistency. Improved understanding of organic matter, soil biological functioning and nutrient availability in organic systems will contribute to conventional agriculture where 'soil health' is also a key priority.

Managing soil phosphorus (P) is a major issue, especially for grain or grain-graze systems where significant P is exported from the system and organic-acceptable replacement P is either not available or it is ineffective. Learning how to manage P in the absence of soluble P fertiliser inputs has the potential to also benefit conventional farmers who wish to use the bank of soil P built up over many years of fertiliser use (e.g., the use of micro-organism inoculants or 'biofertilisers').

- Improved methods for plant and animal protection.

Plant and animal pests and diseases are common problems to all organic producers. Pests and diseases reduce productivity and can severely impact on product quality.

The organic industry principally utilises an integrated farming systems approach to minimise the impact of pests, weeds and disease. A secondary approach is the use of

inputs (e.g., herbicides) that comply with organic standards, an approach which is particularly important during the conversion period. There is an ongoing need for improved ecological pest, weed and disease management strategies along with inputs capable of effective management of pests and diseases that are recognised by international organic certification standards. Some organic-acceptable inputs will be important for conventional agriculture, including plant-based herbicides, insecticides and anthelmintics.

Supply Chain, Food Safety and Technical Issues

Supply chain issues are critical to the success of the organic industry however not all are technical issues requiring research. Key research priorities are:

- Increasing knowledge of supply chain constraints through focused analysis of specific supply chain problems, particularly in horticulture and meat.
- Addressing technical barriers to market access.

Technical barriers for market access can arise from non-equivalence of organic standards between countries or from other quarantine or food safety requirements. This is particularly the case in key markets in Japan, USA and Europe. Research is required to validate the efficacy or safety of existing pest control strategies and to investigate alternative strategies that meet international standards.

- Food safety risk management.

Leveraging international efforts in organic food safety research is required to validate inputs and practices along the supply chain to ensure organic product safety and quality and to develop industry capacity to assure the production and supply of organic foods.

Validation of Organic Farming System Performance

Scientifically validating the benefits of organic farming systems. The industry is driven by the belief that it offers a superior, sustainable solution when assessed on a holistic triple bottom line approach and that organic foods may be nutritionally superior to conventional foods. The long term viability of the industry will be dependent on its ability to substantiate these claims on a scientific basis.

- Agro-ecological assessment of organic farming systems

Research that develops indicators of system performance and benchmarks industries/ecological zones using these indicators will allow for scientific comparisons of integrated farming system performance under Australian conditions. This will also provide a mechanism to engage with conventional farming systems researchers and draw them into serious discussion on the merits of organic farming systems. The work must be within the Australian context but the underpinning conceptual framework for ecosystem evaluation should be built on international work in this area.

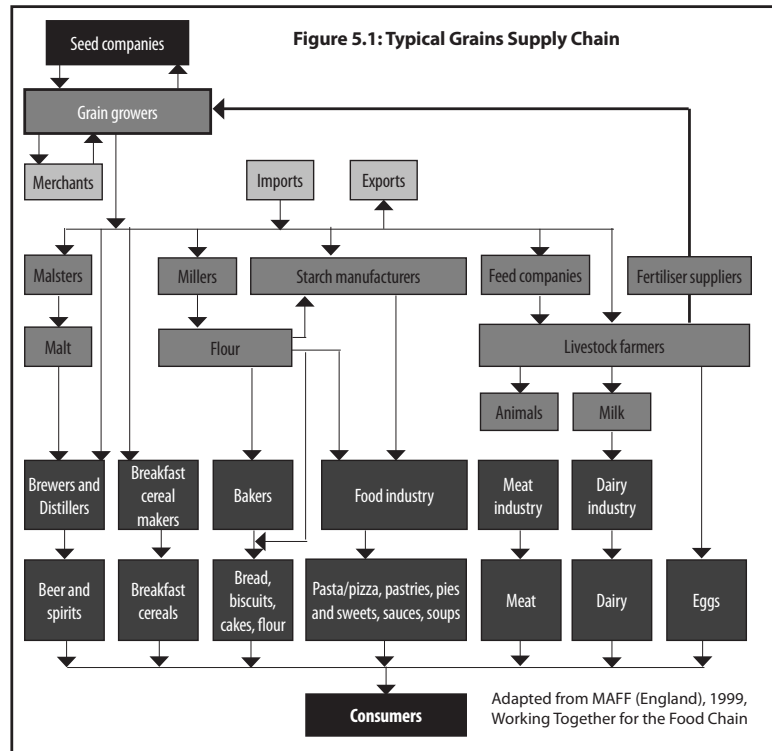
Understanding the relative performance of different farming systems with respect to key indicators e.g., greenhouse gas emissions, biodiversity and water utilisation will potentially underpin the industry's ability to gain funding under other agricultural sustainability initiatives (climate change, water, soil remediation).

Priority Sectors

The relative priority of the principal organic sectors is presented here assuming that their willingness to invest in the industry is relatively equal. Discussions held with sector RDCs during the consultation process generally support this assumption however if this proves not to be the case then the priorities will be reassessed.

Grains

The grains industry is the highest priority sector due to its significance within the food industry supply chain. Figure 5.1 illustrates how grains are integral to a large proportion of the food supply chain. It is directly fundamental to many baked and food products. In addition it is also an important source of feed to the meat, dairy and poultry industries. The supply of organic goods to a significant proportion of the food industry is not possible without a diverse and cost effective supply of organic grains.



Grains ranks third behind meat and horticulture in terms of the farmgate value of organic produce. Despite a worldwide shortage of organic grains, Australia is currently importing organic grains such as oats and wheat flour to make up our domestic shortfall. National organic organisation such as the OFA and the certifiers receive regular requests from around the world for organic grains from Australia. The current demand is very high on both the domestic and the export markets and represents a significant opportunity for Australian farmers.

Dairy

Organic dairy industry leaders in Australia are reporting a shortfall in milk to meet the growing demand for organic dairy products. The situation is even more drastic in the USA and the UK with both markets having to import organic dairy products to meet the shortfall.

The UK organic milk market is growing rapidly with many retailers reporting sales increases of over 50% in 2005. Sales have soared since scientific research found organic milk to have superior nutrient content than non-organic milk. Consumer demand for organic milk has broadened since several studies showed it to have higher levels of vitamin E, omega acids and conjugated linoleic acid than conventional milk.

There is enormous potential for Australian dairy farmers to access high value domestic and export markets by supplying the shortfalls, justifying this as the second priority sector.

Horticulture

Despite around 80% of certified organic farms being horticultural enterprises the organic horticultural sector is characterised by ad hoc supply chains that have periods of gross over and under supply with very mixed qualities. It makes it difficult for retailers to build up demand for products when they are unreliable in terms quality and quantity. Consumers need consistent quality and need to have the product on the shelf. Lack of acceptable quality and regular absences from the shelf results in consumers buying other brands – i.e., conventional instead of organic. Lack of consistent supply has been identified in most major organic markets around the world as the major impediment to growth. Coordinated and planned supply chains can even out the troughs and peaks in supply and quality. Australia is in the unique situation that many fruits and vegetable can be produced year round or over extended seasons by having growing districts from the tropical northern regions to the cool temperate southern regions.

The third priority sector is horticulture. Although less well integrated it is still a very important component of the food chain. More importantly however, is its significance to the organic sector in terms of the farmgate value of produce and the proportion of producers involved in the horticultural sector (Figures 2.1 and 2.2).

Meat

Australia has the potential to be an international force in organic meat production. Australia has more certified organic land than any other country, the majority of which is dedicated to extensive grazing operations. Furthermore, the fact that Australia is Foot and Mouth Disease and BSE free creates a further competitive advantage. The value of organic meat and the producers involved in meat production (Figures 2.1 and 2.2) justify meats inclusion as a priority sector.

While predominantly focused on beef and lamb, there is a fair range of organic meats produced in Australia such as veal, goat, poultry and pork. The organic meat industry is set to expand rapidly. In particular, there is growing demand in the food service sector and high-end eating establishments are featuring organic beef and lamb on their menus. Expansion is also likely in poultry and pork although organic is more problematic in intensive animal industries because of greater vulnerability to disease.

The supply of organic meat fluctuates more than its conventional counterpart as a result of the availability of organic feed. Much of Australia's organic meat is sold through organic meat cooperatives to processors but matching supply and demand is a key constraint.

Other

Other sectors, e.g., fibre, fish and wine should be considered on a case by case basis driven by the willingness of the sector RDC or industry to co-invest in the programs defined in this plan. Aquaculture represents a significant opportunity where organic-acceptable feed is available, in particular grains.

Priority Knowledge Related Activities

Translation and adaptation of existing relevant knowledge

Translation and adaptation of existing knowledge is the fastest, most cost effective method of addressing industry knowledge gaps and facilitating uptake of organic systems practice. There are two sources of knowledge that need to be proactively mapped and continually screened for relevance and application to the Australian organic industry:

- International organic industry research and practice
- Australian conventional agricultural research and practice

Translating this knowledge into extension packages and tools, and where necessary undertaking demonstration trials and/or applied research to tailor the knowledge to Australian organic farming conditions will provide the most cost effective approach to achieving desired industry outcomes.

Assessment of the relevance of organic practices and knowledge to conventional agriculture should also be performed. Knowledge and practices that have benefit for improving conventional farming systems should be packaged and disseminated through more traditional extension/adoption routes.

Generation of new Australian specific knowledge

Areas where it is necessary to generate new knowledge occur where gaps are identified that are specific to the performance of organic systems within the Australian environment and supply chains. Where possible, underpinning modeling and fundamental/strategic research should be accessed or leveraged through international collaboration. The program does not have access to sufficient funding to invest in its own fundamental or strategic research at this phase of its development.

Co-investment in Organic Research and Development

The development of the CRC application and this plan identified a number of potential co-investors in organic research with RIRDC. Over the life of this plan RIRDC aims to expand Australian investment in organic research with the longer term objective of providing the industry with a sustainable organic research and knowledge base, and infrastructure. These include partnerships in areas of mutual interest with GRDC, DA, MLA and LWA (Land and Water Australia).

The co-investment strategy must recognise the different expectations and benefits from partners and provide flexibility in models for collaboration to meet differing needs and capacities. Table 5.2 summarises potential co-investors and benefits that co-investment in organic research may provide. The commodity R&D corporations will benefit by developing alternatives for conventional farmers who wish to diversify out of unprofitable industry sectors.

It is important to note that although this plan has been developed to deliver benefits to the organic industry, there will also be significant spillover benefits to conventional agriculture. Because of the relative size of the organic and conventional sectors, a relatively low level of adoption of outcomes from the organic program by the conventional sector could deliver greater national benefit than a high level of adoption within the organic industry. Organic industry knowledge and practices have the potential to contribute meaningfully to the challenges facing conventional agriculture and food supply, in particular to improve on-farm

sustainability (potentially through improved soil health) and reduction of chemical use throughout the food supply chain.

Table 5.2 Organic Industry R&D Plan Stakeholders

| Stakeholder | Investment | Area of Program | Benefits from Investment |
|---|--|---|---|
| RIRDC Representing the Federal Govt | Cash Program management Existing knowledge / IP | All areas of program | Partnership with dynamic growing industry Recognition of leadership role in industry development Share of IP of new knowledge Ownership of Branded Knowledge Hub Increased organic farm productivity Increased sustainability of Australian organic and conventional agriculture Increased value of organic produce Increased exports / Import replacement Outcomes aligned with national research priorities |
| Other RDCs GRDC, HAL, MLA DA | Cash Existing knowledge / IP | Knowledge Translation / Communication Knowledge mapping Organic best practice Organic application trials Sector science projects Capability building | Connection with & understanding of growing dynamic sector Ready access to organic industry networks Ready access to organic farming system knowledge Demonstrated return on organic producer levies Improved risk management within sector Increased organic farm productivity Increased sustainability of sector organic and conventional producers Increased value of organic produce Increased exports / Import replacement Increased understanding of conventional farming systems |
| Other Federal R&D Funders Sustainability / Environmental Agencies eg NHT / GHG Office / DEH | Cash Existing knowledge / IP | Agro-ecological assessment Capability building | Ready access to organic industry networks Increased sustainability of organic and conventional agriculture eg reduced GHG emissions, improved water utilisation |
| State DPIs | Cash / In kind Existing knowledge / IP Access to industry networks | Knowledge Hub Organic best practice Organic application trials Sector science projects Supply chain technical issues Capability building | Connection with & understanding of growing dynamic sector Ready access to organic industry networks Ready access to organic farming system knowledge Improved risk management within sector Increased organic farm productivity Increased sustainability of sector organic and conventional producers Increased value of organic produce Increased exports / Import replacement Increased understanding of conventional farming systems |
| Organic Industry Organisations eg DFA, Certifiers | Cash Access to industry networks In kind | Knowledge Hub Organic best practice Capability building | Validated information on Organic farming system performance Increased stature / status of industry Access to high quality information for members Improved business performance of members |
| Organic Primary Producers | Levies to RDCs Knowledge in-kind | All areas of program | Faster / easier access to farming system knowledge Increased farm productivity Increased value of produce Increased understanding of farming system Improved farming system performance Enhanced networking opportunities |
| Other Organic Businesses eg Co-operatives, Processors, Wholesalers, Retailers | Cash Access to industry networks In-kind Knowledge | Knowledge Hub Organic best practice Supply chain food safety Capability building | Relevant supply chain knowledge Improved quality fo produce Increased profitability Enhanced networking opportunities |
| Australian Research Providers eg Universities, State DPIs | Cash In kind Knowledge | Science Leadership Sector science projects Supply chain food safety Capability building | Research funding Standing with dynamic growing industry |
| International Research Providers eg EU Collaborative Programs | Knowledge / IP Access to international networks | Knowledge Translation / Communication Organic best practice Supply chain food safety Agro-ecological assessment Capability building | Access to larger knowledge pool Leverage on existing funding Standing within Austrlian organic industry |

6. The Research and Development Program

Organic R&D Program Goal

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

Organic Industry R&D Objectives

The research objectives of the program in order of priority are to:

1. Improve organic farming system performance
2. Address supply chain and food safety issues and technical barriers
3. Assess agro-ecological performance of organic farming systems

These objectives provide the boundaries for the Organic Systems R&D Program over the next five years. Each objective is addressed from two perspectives, as outlined in the two major strategies below.

Organic Industry R&D Strategies

The plan consists of two interlinked strategies which over the life of the plan will be invested in as shown.

| | % of RIRDC Investment |
|--------------------------------------|-----------------------|
| 1. The Australian Organic Hub | 40% |
| 2. Organic Industry Research Program | 60% |

The Australian Organic Hub

RIRDC will establish an Australian Organic Hub to rapidly increase adoption of existing knowledge by Australian organic producers and businesses. The Hub will:

- Synthesise conventional farming system and supply chain / food safety knowledge (15% of budget)

The Hub will work with sector RDCs and relevant research providers to map and screen their existing knowledge for potential application within the organic industry and to identify organic 'add-ons' to existing RDC projects and programs.

Key performance indicators:

- Knowledge mapped from conventional agricultural research to define what can immediately be adopted by the organic industry to facilitate the development of extension packages.
- Extension packages developed for organic industry based on conventional agriculture.

- Knowledge gaps identified where investment from the RIRDC Organic Systems Program (to research funded by other commodity RDCs) will ensure that future research meets the needs of both organic and conventional sectors.
- Synthesise organic system and supply chain / food safety knowledge (20% of budget)

The Hub will be a focal point for the translation of organic knowledge into user friendly packages and tools for dissemination via existing organic industry networks. It will also identify knowledge gaps to inform Sector Research Plans for grains, dairy, horticulture and meat.

Key performance indicators:

 - Knowledge of Australian organic systems synthesised into user-friendly packages and tools for the Australian organic industry.
 - Knowledge gaps identified to inform Sector Research Plans.
 - Communicate the scientific case for organics (5% of budget)

Scientific interaction with conventional agriculture must become a two way activity. The Hub will be the conduit for two-way communication between the organic industry and conventional agriculture, providing targeted information to RDCs and other key influencers in conventional agriculture.

Key performance indicators:

 - Number of proceedings of RIRDC organic workshops published, e.g., phosphorus (P) workshop.
 - Number of ‘information packages’ (e.g. AgFacts) for the organic industry prepared by scientists.
 - Number of papers in reputable journals and conference proceedings from RIRDC-funded research.
 - Number of organic research citations in Citation Indexes.

Organic Industry Research Program

The research program will be outcomes driven and investment will be strategically targeted to maximise the benefits for the Australian organic industry. Ideally investments in research will be through collaborative partnerships and involve end users in the planning, review and where appropriate directly in the research activity. New features of this plan relating to its management and broader objectives are:

- Finalise and implement Sector Research Plans for the grains, dairy, horticulture and meat sectors (30% of budget)

Key performance indicators:

 - Research program established to address the main constraints to conversion of farms to organic production - cost and perceived risks of conversion, lack of relevant and practical information, inputs and control strategies, product quality and consistency of supply.
 - Supply chain/ food safety issues identified and prioritised that are amenable to R&D.
 - International collaborations proactively developed and maintained.
 - International best practice translated into the Australian context.

- Incorporate organic objectives in key areas of research for conventional agriculture, including plant variety testing on organic farms, development of plant-based biocides, and soil-P management in the absence of inputs of soluble P fertilizer (12% of budget)

Key performance indicators:

- Evaluation of crop varieties for organic production incorporated into all major plant breeding programs.
 - Co-investment secured for a program of research aimed at managing soil phosphorus without inputs of soluble P fertilizer.
 - Co-investment secured into the development of novel plant-based biocides of importance to organic and conventional agriculture.
- Adapt research outcomes from conventional farms to organic farms (12% of budget)

Key performance indicators:

- Experimental programs commenced on organic farms in key areas of weed management and non-chemical control of internal parasites in animals.
- Develop indicators for agro-ecological assessment of organic farming systems (6% of budget)

This area of work will develop the key indicators of system performance (including social and economic) and benchmark key industries/ecological zones using these indicators. It will allow for scientific comparison of the performance of integrated farming systems.

Key performance indicators:

- Key indicators of system performance utilised, to allow for scientific comparison of the performance of integrated farming systems.
- Co-investment secured to establish the relative sustainability of alternative approaches to agriculture, at landscape scale.

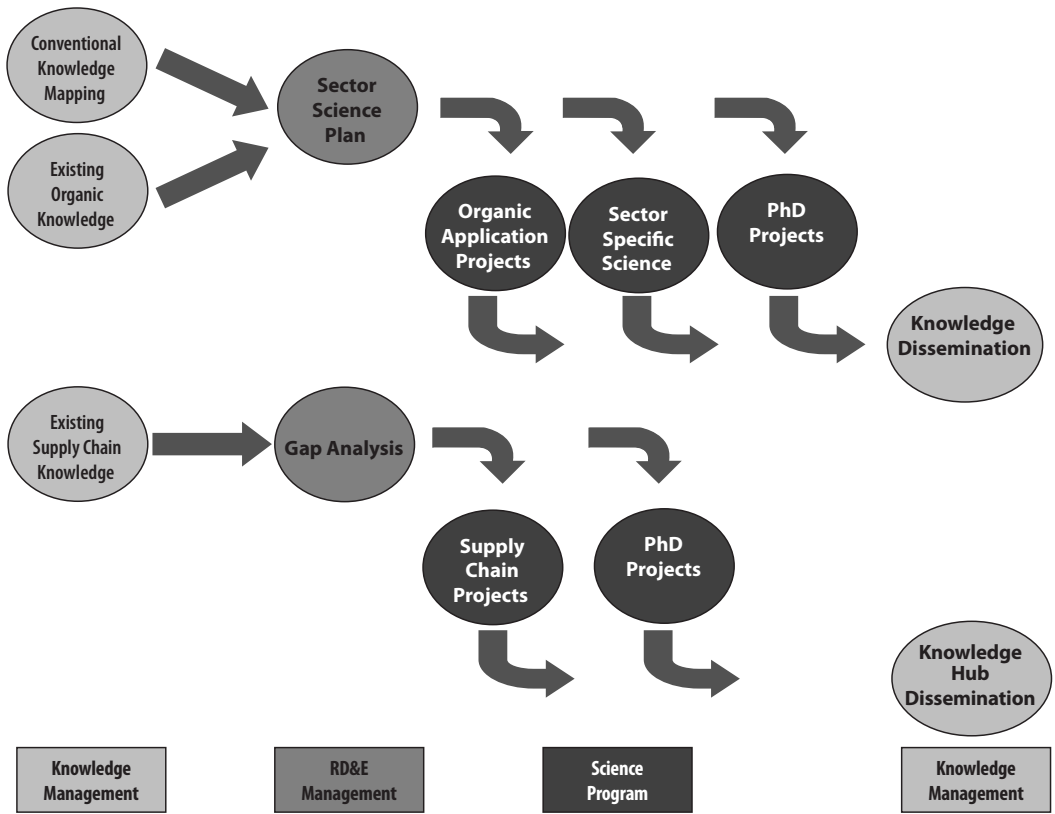
Implementation

The plan is based on a potential increase in RIRDC's investment to \$450,000pa by year 5, but the aim is to match this with significant co-investment that will grow to an overall cash investment of \$1,000,000 by the end of the period. Enhanced funding will be contingent on a positive annual review of performance against the plan. The RIRDC Board has approved the budget of \$280 k for 2006-07. Funding of outyears is dependant on future Board approval.

The rate of implementation of the plan is dependent on the funding that is available. The targets in the budget have been set at a level that is achievable by the industry at its current state of development. As more funding is secured from other co-investors the rate of implementation of specific programs can be increased.

A key aspect of the implementation of the plan is the linkage between the "Knowledge Management", and "Research Program" aspects of the plan. The project flow is illustrated in Figure 6.1.

Figure 6: Project Linkages



An indicative budget for the program over the course of the plan is presented in Table 6.1.

Table 6.1 Organic Industry 5 Year R&D Plan (Indicative budget)

| Financial Year (FY) | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
|---|----------------|----------------|----------------|----------------|----------------|
| Investor cash contributions ONLY | | | | | |
| Organic Hub | | | | | |
| <i>RIRDC</i> | \$80,000 | \$130,000 | \$175,000 | \$200,000 | \$200,000 |
| <i>Other investors</i> | \$50,000 | \$150,000 | \$175,000 | \$200,000 | \$220,000 |
| Research program | | | | | |
| <i>RIRDC</i> | \$100,000 | \$150,000 | \$225,000 | \$240,000 | \$250,000 |
| <i>Other investors</i> | \$30,000 | \$120,000 | \$250,000 | \$280,000 | \$330,000 |
| Existing commitments | | | | | |
| <i>RIRDC</i> | \$100,000 | \$30,000 | \$0 | \$0 | \$0 |
| TOTAL | | | | | |
| <i>RIRDC</i> | \$280,000 | \$310,000 | \$400,000 | \$440,000 | \$450,000 |
| <i>Other investors</i> | \$80,000 | \$270,000 | \$425,000 | \$480,000 | \$550,000 |
| <i>Total</i> | \$360,000 | \$580,000 | \$825,000 | \$920,000 | \$1,000,000 |

Organic Industry R&D Program Performance Indicators

There are many factors that contribute to the objectives of this plan. The relative contribution of any one factor is difficult to define. However for this plan, and R&D generally, to contribute to the achievement of these goals there are a number of necessary steps each of which is readily measured; the plan must be implemented, the plan must initiate appropriate activities that generate R&D outputs, and these outputs must have impact.

All general key performance indicators given below are indicative and will require review and on-going monitoring. Baseline data will be established in the first year and trends monitored and reviewed over subsequent years.

Key Performance Indicators (KPIs) for the plan as a whole are as follows:

Successful implementation of the new Organic R&D plan

- \$ investment in Australian organic R&D
- % of Australian organic R&D investment from non-RIRDC sources
- Sector Research Plans endorsed by the organic industry
- Extent membership levels/fees increased for Biological Farmers Australia (BFA) and National Association for Sustainable Agriculture Australia (NASAA)
- Number of scientists actively involved in Australian organic R&D
- Number of postgraduate students involved in Australian organic R&D
- Number of dissemination channels of the Australian Organic Hub
- Number of knowledge providers/partners for the Australian Organic Hub

Outputs from Organic R&D Plan 2006-2011

- Number and value of potential improvements to organic systems productivity
- Number and value of potential improvements in organic product quality, safety and consistency of supply
- Number of Australian Organic Hub products
- Industry survey of relevance and awareness of the Research Program and Australian Organic Hub (annual)
- Industry participation and use of the Australian Organic Hub
- Number of PhD students sponsored by the program still associated with the industry

Impacts of Organic R&D plan 2006-2011

- % of productivity improvement strategies implemented and their impact
- % of product quality, safety and consistency strategies implemented and their impact
- Cost benefit assessment of program activities
- International recognition of Australian organic R&D capability

7. Adoption / Commercialisation Opportunities

The partnership between RIRDC and the organic industry is the basis of this plan and the priority for adoption is successful, widespread use of the practices and science underpinning organic systems by both organic and conventional agri-food supply chains.

The new Australian Organic Hub activities will accelerate application and impact of research outputs on Australia's organic industry while adoption will be further improved on previous plans through the stronger involvement of industry practitioners in all aspects of the research program. The Hub will deliver a step change in delivery of knowledge / research output to the industry.

The sector research plans will include the development of a business case for each initiative identified within the plan. These business cases will identify potential commercialisation opportunities that will arise from the research. It is expected that some business cases will involve significant commercialisation potential, including two areas identified in Section 5, namely 'biofertilisers' and plant-based biocides that will be used in both organic and conventional agriculture.

In future plans, as the emphasis of work moves from the current applied focus to more strategic work, opportunities for commercialisation will increase.

Appendix 1: Alignment with Corporate and Government Priorities

The Organic Research Plan is strongly aligned with RIRDC and Government national and rural research priorities as outlined in Tables 8.1 and 8.2.

Table 8.1 National Research Priorities and Associated Priority Goals

| National Research Priority | Priority Goal | Organic Research Plan |
|---|--|--|
| An Environmentally Sustainable Australia | <p>Water – a critical resource</p> <p>Transforming existing industries</p> <p>Overcoming soil loss salinity and acidity</p> <p>Sustainable use of Australia’s biodiversity</p> <p>Responding to climate change and variability</p> | <p>Organic farming systems offer a key alternative for transforming conventional farming practices to:</p> <ul style="list-style-type: none"> • Reduce water consumption, • Reduce GHG emissions • Redress soil degradation • Maintain biodiversity <p>The agro-ecological assessment element of the plan will provide a quantitative basis for defining the potential contribution the organic industry can make to achieving these critical goals.</p> |
| Promoting and Maintaining Good Health | <p>Preventative healthcare</p> <p>Strengthening Australia’s social and economic fabric</p> | <p>The organic sector is leading the response to consumer demands for clean, green, safe and healthy products.</p> <p>The outputs of the plan have the potential for significant flow-on benefits reducing chemical dependence in the traditional agricultural sector.</p> <p>The holistic approach adopted by the industry will also be a key enabler for strengthening the social and economic fabric of rural and regional Australia.</p> |
| Frontier Technologies for Building and Transforming Australian Industries | <p>Smart information use</p> <p>Promoting an innovation culture and economy</p> | <p>The Australian Organic Hub will be a leader in the application of management of information within rural industries.</p> <p>The industry capability building components implicit in the plan will directly contribute to the development of an innovative culture within the organic industry</p> |

Table 8.2 Rural Research Priorities

| Rural Research Priority | Organic Research Plan |
|--|--|
| Sustainable Natural Resource Management | Organic farming system research directly addresses the high priority expectation for research into designing farming systems that are more attuned to natural processes, are compatible with protection of biological diversity, minimise and avoid adverse off-farm impacts and maintain ecosystem function. |
| Improved Trade and Market Access | Technical barriers to market access are directly addressed in the supply chain program of the plan. |
| Improving Competitiveness through a Whole of Industry Approach | The supply chain focus that underpins this plan is directly aligned with this priority. Diversification into niche markets such as organic produce is a key risk management strategy of this priority area. |
| Maintaining and Improving Confidence in the Integrity of Australian Products | The supply chains project of food safety risk assessment directly addresses this priority. |
| Creating an Innovation Culture | The industry capability building components implicit in the plan will directly contribute to the development of an innovative culture within the organic industry |

Appendix 2: Key Contacts for R&D Program

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