Australian Government

Rural Industries Research and Development Corporation

Wildflowers and Native Plants Five Year R&D Plan

2008 to 2013

RIRDC Shaping the future

Australian Government

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Foreword

The Rural Industries Research and Development Corporation has supported the Wildflowers and Native Plants Program since it was established in 1990. Since 1995, the Program has invested over $15 million to support over 180 projects, with the RIRDC contribution amounting to $4.9M.

RIRDC is committed to the development of five year plans for each of its Research and Development Programs in keeping with the Corporation's Five Year Corporate Plan, and the National and Rural Research Priorities.

The Australian wildflower and native plants industry focuses on flowers and foliage native to Australia and South Africa. Growers are located in most States and other key stakeholders are specialist wholesalers and exporters, chemical and fertiliser suppliers, florists, packaging and freight companies, and Australian Federal and State Governments. Recently, largely due to water shortages, past breeding programs for native cut flowers have given rise to a new opportunity to develop the same varieties for the landscape and nursery industries. This is an untapped area of research and development.

The wildflower industry is unique among Australian horticultural industries in its strong export focus. Wildflowers account for most of Australia's fresh flower exports. While there is scope for further export growth, there needs to be a stronger focus on developing domestic market opportunities. On the world market, our industry's main competitive advantage lies in its ability to source new crops and products from our diverse and unique range of endemic flora.

The total value of the industry is estimated at $50M (wholesale). Australia wide it is estimated that there are some 500 growers. Some concentrate on a single product, others grow high value niche products and many crops lend themselves to broadacre production.

This Five Year Plan builds on the outcomes of a national industry survey and stakeholder workshop conducted in the first quarter of 2007. These activities reviewed the achievements of the 2000-2005 Five Year Plan and determined the key issues and priorities for future research support. The Plan defines the agreed strategic research and development needs that RIRDC will pursue in partnership with industry. It identifies key objectives for investment, highlighting the targets identified by stakeholders. The recently formed national industry body, Wildflowers Australia Ltd, will play a key role in supporting the implementation of this Plan, identifying key projects, collecting voluntary funds from industry partners and communicating achievements to stakeholders.

This Plan aims to assist the Australian wildflower and native plants industry to build and develop its future.

Peter O'Brien
Managing Director
RIRDC

Snapshot of the Five Year Plan

Vision

Our vision is:

- For the Australian wildflower and native plants industry to be nationally and internationally recognised as a reliable supplier of quality flowers and foliages and innovative products; and
- For the industry to be commercially focussed and sustainable through having the requisite skills and knowledge for efficient, profitable and sustainable production.

Mission

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

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

Objectives

1. Provide profitable and sustainable production and management systems
2. Improve product quality through postharvest care and quality standards
3. Assess and evaluate markets to improve commercial outcomes for the industry
4. Improve existing products and develop new ones
5. Enhance the human capital of the industry and consequent research knowledge and adoption

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1. Introduction

Preparation of the Plan

This R&D Plan was developed through a national industry survey followed by a national one day workshop with key stakeholders and members of the RIRDC Wildflowers and Native Plants R&D Committee. The survey was conducted from January to March 2007 and used a range of industry networks to target as many stakeholders as possible. The workshop was held in Melbourne on March 20, 2007 and involved 37 stakeholders drawn from all States (except Tasmania). It was facilitated by Bettina Gollnow, Industry Development Officer (Floriculture) with the NSW Department of Primary Industries.

The key areas surveyed were:

- The industry careers and experience of survey participants
- The main crops and markets targeted by the survey participants
- Issues which have a major impact on wildflower related businesses
- Personal involvement of survey participants in the 2000-2005 R&D Plan and their assessment of this experience
- Whether or not participants were growing products partly or wholly developed by the 2000-2005 Plan
- Access and usage of RIRDC sponsored information on Australian wildflowers and native plants
- The objectives for the new Plan – should they change or stay the same?
- Important short and long term priorities for the new R&D Plan to consider
- Willingness to support R&D with voluntary cash contributions
- Membership of the Program Industry Advisory Committee
- How researchers develop a new project

The key questions discussed at the workshop were:

- How well did the 2000-2005 R&D Plan address the stated objectives and goals?
- Who are the stakeholders?
- Which short and long term priorities suggested by the national survey are the most important?
- What should be the key objectives for the new Five Year Plan?
- What are the most effective ways to inform industry stakeholders about the results of RIRDC funded research?
- How can we ensure that the new varieties and products developed through RIRDC R&D funding achieve maximum commercial benefits for the Australian industry?
- How do we measure success of the next Plan?

The summary of the outputs and outcomes of the 2000-2005 R&D Plan was prepared by Bettina Gollnow, and incorporates feedback from stakeholders gained via the survey, workshop discussions and individual interviews with industry stakeholders. A draft of the Five Year R&D Plan was distributed to workshop participants, the R&D advisory committee and other stakeholders before it was finalised.

Overview of the R&D Plan

Vision

The vision and mission for the Wildflowers and Native Plants R&D Program have been expanded to reflect the need for the industry to be more commercially focussed and sustainable through efficient production systems, while maintaining and increasing its reputation as a supplier of quality flowers and foliage and including innovative products. The five objectives reflect current industry priorities and meet the vision of the Wildflowers and Native Plants Program. The strategies, targets and indicators address the key industry strengths, opportunities, weaknesses and threats.

The Plan aligns well with the Federal Government's National Research Priorities and Rural Research Priorities and with RIRDC's Corporate objectives.[1]

Alignment with Government and RIRDC priorities

Contribution to RIRDC outcome areas

RIRDC has an overarching goal of maximising the return across the triple bottom line of its investments. It has five main outcome areas as set out in the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act) and as directed in the government research priorities. The Wildflowers and Native Plants Program is in RIRDC's New Rural Industries Portfolio, of which the goal is:

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

The **Portfolio Strategies** are to invest in R & D for new rural industries:

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

The Australian wildflower industry is a new rural industry which had already demonstrated its capacity to support these portfolio strategies. It produces a wide and diverse range of products for domestic and export buyers, ranging from wild harvested products, through to high value niche products and broadacre crops. A range of technologies and management practices to improve quality and profitability give Australian growers a significant edge.

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1 See RIRDC, Corporate Plan 2007-2012 on the web at www.rirdc.gov.au

Our industry's main competitive advantage lies in its ability to develop new crops and products from our diverse and unique endemic flora. This meets the demands of 'fashion driven' local and overseas buyers.
The wildflower industry is mainly located in regional Australia. It offers valuable diversification options for landholders who can either supply products year round, or include wildflowers in a mixed farming operation.

The Portfolio will have achieved success when:

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

National research priorities

The contribution made by this Plan to the Australian Government's National Research Priorities and the Rural Research and Development Priorities is set out on the next table.

This industry has a strong focus on the commercial development of selected Australian flora to meet the needs of the world floriculture industry. In doing so, the Australian wildflower and native plants industry contributes to the Australian economy and at the same time safeguards our unique environment through sustainable and efficient production systems. It is an excellent example of commercial enterprises well integrated into natural rangelands and providing shelter for wildlife.

Table 1.1 National Research Priorities and the Rural Research and Development Priorities

National Research Priority	**Rural Research Priority or Goal**	**RIRDC Strategy**	**Relevant Wildflower and Native Plants Program Objective**
An Environmentally Sustainable Australia	1. Water – a critical resource 5. Sustainable use of Australia's biodiversity 7. Responding to climate change and variability	To invest in R&D that addresses natural resource management and sustainability issues of national importance including investments in environmental farm management, agroforestry systems, organic farming systems, and farming systems that integrate rangelands and wildlife. To invest in R&D that addresses issues of national importance affecting the rural sector, including changing energy supply and demand, water resource issues, and the impact of climate change and variability.	Objective 1 includes strategies designed to achieve more efficient inputs of water, fertiliser and pesticides, thereby reducing the impact of the Australian industry on the environment. Commercial enterprises are well integrated into natural rangelands and provide shelter for wildlife. Objectives 2 and 4 are focussed on developing high quality commercial products for the world floriculture market from Australia's unique and rich flora. These products are cultivated in plantations and thereby reduce threats to natural rangelands. Many flower and foliage products have already been developed from our native flora and are cultivated extensively both locally and overseas.
Promoting and Maintaining Good Health	4. Strengthening Australia's social and economic fabric	To invest in R&D that improves productivity and adds value to new rural industries, established rural industries and across all commodity sectors. To invest in R&D that improves supply chain relationships and market	All of the Plan's objectives contribute to improving the economic strength of the Australian industry through more efficient production systems, better market information, improved products, and enhanced industry capacity and communication

National Research Priority	Rural Research Priority or Goal	RIRDC Strategy	Relevant Wildflower and Native Plants Program Objective
		access for new rural industries, established rural industries and to improve the global competitiveness of the Australian rural sector as a whole	channels. A major strategy (Objective 2) is raising the quality and consistency of plantation grown native flowers to focus on best practice and on cultivated rather than wild harvested products.
Frontier Technologies for Building and Transforming Australian Industries	2. Frontier technologies 4. Smart information use 5. Promoting an innovation culture and economy	To invest in R&D that addresses the human capacity, leadership and learning needs of rural Australia. To ensure that R&D investments for new rural industries, established rural industries and national rural issues are designed to maximise adoption by industry. To invest in R&D that develops new and existing technology to improve the profitability, sustainability and resilience of new rural industries, established rural industries and the Australian rural sector as a whole. To ensure that these R&D investments are designed to maximise adoption by industry.	The Plan advocates and supports a stronger role for the newly formed national industry body, WildFlowers Australia Ltd in developing and funding of new projects, enhancing the human capital of the industry. More diverse communication strategies (Objective 5) will strengthen the social and economic fabric of the industry through uptake of R&D outcomes. Objectives 1, 2 and 4 encourage the use of new and novel technologies in pursuit of the desired outcomes. The scope for frontier technologies is particularly strong in breeding improved varieties, improving nursery plant production systems and postharvest protocols and in more efficiently managing water, fertiliser and

National Research Priority	Rural Research Priority or Goal	RIRDC Strategy	Relevant Wildflower and Native Plants Program Objective
			pesticide inputs.
Safeguarding Australia	3. Protecting Australia from invasive pests and diseases	To invest in R&D that addresses biosecurity issues of national importance	Improved nursery propagation and plantation management promoted by Objective 1 will protect the industry from an outbreak of invasive pests or diseases. This includes exotic species introduced via the importation of exotic ornamental or agricultural species.

2. Overview of the Wildflowers and Native Plants Industry

The wildflower industry is that sector of the Australian flower industry focussed on flowers and foliage native to Australia and South Africa, sometimes also called 'hard flowers'. The industry is strongly aligned with the 'fashion' and 'lifestyle' sector where demand is fickle and can change quickly. To remain competitive on the world market, the industry needs to focus on three areas:

1. to deliver quality flowers consistently
2. to keep building its reputation for innovative products and improved varieties
3. to strengthen communication and linkages between industry stakeholders

While many 'wildflowers' originate from Australia, Australian growers account for a relatively small share of total world production.

Australian wildflowers and native plants are 'newly domesticated' species and so there is still a great deal to learn about their breeding, propagation and production systems. Many are woody species which do not attain marketable yields for some three to five years.

The Department of Agriculture, Forestry and Fisheries funded Industry Partnerships Program has produced an industry review ('taking stock' report), supported a national industry summit in late March 2007 and has helped to facilitate the development of a national industry body which will serve as a coordinating body for the industry.

Structure and location

Wildflower and native plant products are primarily cultivated in plantations, with a few crops now grown more intensively in growing media in simple greenhouses. A proportion of product (estimates range from 10-20% of total product) is sourced from wild stands, which are often actively managed to foster sustainable harvest cycles. There is a degree of specialisation of product in the various states, depending on climatic zones, markets and history of the industry and reflecting commercialisation of species endemic to a given state. Specialist wholesalers and exporters who deal with native flowers and wildflowers operate in most states, in step with access to major urban populations and airports. Growers operate in all states of Australia. Plantation size and grower skills vary considerably.

In 2007, the industry is leaner due to the exit of mostly small scale growers who suffered production losses over several years due to drought or lacked capital to remain competitive. There is a strong core of larger scale operators and some significant investment from new players. A trend towards larger enterprises could improve quality and profitability through greater efficiencies of scale.

The wildflower industry produces a wide and diverse range of products. Some producers concentrate on a single product, others grow high value niche products and many crops lend themselves to broad acre production.

Stakeholders linked to the RIRDC Wildflowers and Native Plants R&D Program cover a broad range and include Australian growers, researchers and value chain participants - chemical/fertiliser suppliers, florists, wholesalers, exporters, packaging and freight companies (both overseas and domestic), and Australian Federal and State governments.

Level of gross value of production (GVP) and rate of growth

The wildflower industry is unique among Australian horticultural industries in its strong export focus. Wildflowers account for most of Australia's fresh flower exports and there is scope for further growth. The total value of the industry was estimated at $50M (wholesale) in 2005. The diverse nature of the Australian flower industry means that reliable statistics are limited. Plantation sizes and grower numbers vary considerably, depending on the source. Australia wide it is estimated that there are some 500 growers.

Domestic and export market situation

The industry has great opportunity to further exploit current market demand and new product development, utilising our diverse range of native flora, to meet the needs of 'fashion driven' local and overseas buyers. This in turn could attract more investment and allow existing players to expand.

Demand for wildflowers has recently expanded in the domestic market. Evidence for this includes a greater proportion of wildflower products in supermarket bunches, and more wildflowers included in the wholesalers' range.

The main export market for Australian wildflowers is Japan. Our market presence in Japan is currently less than 1% of their total flower imports. They are one of our nearest major flower markets, and in our time zone, both of which afford us a natural competitive edge in providing product at minimal cost landed. We also enjoy favoured trader status with them and long-term trading links. Development of the Japanese market is a real opportunity, but will require ongoing promotional activity along with a mechanism to allow them to build greater awareness of our product as it becomes available throughout the year. Over the last few years, due to an unfavourable exchange rate and drought, exports to Japan have reduced. However, more recently, the industry has revitalised its approach to export, and market demand has grown noticeably. Major competitors on the world market include South Africa and South American producers. Israel also produces Australian wildflowers.

Competitive Advantage

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

Attractiveness to growers

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

Resource use issues

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

Research and Development

A more profitable Industry

R&D can develop quality standards and a quality management system, which will benefit all stakeholders if widely adopted. Consistently high quality will resolve many current industry weaknesses, such as poor reputation, poor buyer confidence and low profitability, and will lead to increased demand. Greater profitability should in turn attract new investment, on a larger scale. Intensive production of high value products is more likely to appeal to younger growers. Profitability will be further enhanced by the development of more efficient production systems where labour inputs can be cut, for example higher yielding varieties, more intensive production systems, and more efficient harvesting and post harvest techniques. These are all areas where R&D can find solutions. Timely and ongoing market research into both domestic and export markets is needed to understand buyer needs and to develop strategies to increase demand. Allied to this is research to identify the most profitable crops for different regions and markets.

New crops

Most Australian plants are woody species and many do not produce significant numbers of flowers for assessment until the plants are two to four years old. This means that any breeding or selection project must have the capacity to monitor and evaluate resulting plants over an extended time frame, far longer than the average R&D grant. A mechanism is required to ensure that this happens for at least 10 years from the start of the selection program, or the projects will fail to deliver to their full potential.

R&D efforts should continue to develop new crops and products or ‘reinvent’ established ones as new products. Breeding programs and ongoing selection of improved forms from the wild and from within plantations are needed. Greater emphasis needs to be placed on species which achieve marketable yields within six to 10 months of planting and those that can be cultivated intensively in containers, perhaps under protected cropping.

A number of the new products developed through the previous R&D Plan (1995-2000) have returned royalties to RIRDC and the co-investors since 2000 and RIRDC has re-invested its share in the Wildflowers and Native Plants Program.

Crop selection and growing methods

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Domestic market development

Many growers rely heavily on export markets. However, increasing costs, the currently adverse exchange rate and competition from lower cost producers provide a strong driver for the industry to expand its domestic market share. The local market is highly segmented, and adversely impacted by inconsistent supply and quality. Many florists and consumers are unaware of the product range and how to use them.

Funding and adoption of research and development

R&D funding is provided through a partnership between RIRDC, research organisations and industry. The Australian research community has capably demonstrated its capacity to support the wildflowers and native plants industry. While the main focus has been on developing new crops or reinventing others as new products, research has also provided solutions to specific production or post harvest problems. State Departments of Agriculture have also supported and contributed significantly to an array of industry research and development programs for the benefit of their local growers. The RIRDC Wildflowers and Native Plants Program has taken a leading role in supporting the dissemination of technical and research information via industry and scientific conferences and through the RIRDC website. Expanded access and use of this information will benefit all industry stakeholders.

Continued industry fragmentation and the comparatively low level of voluntary cash contributions to the RIRDC program have resulted in a steady reduction in RIRDC's contribution to the program. The 2000-2005 Plan saw a total investment of $7.3M by RIRDC, industry and the research organisations, with RIRDC contributing $2.2M.

Future outlook

The challenge for RIRDC is to decide where the presently limited funds are best spent to achieve the maximum commercial and industry benefit.

It is proposed that the newly formed national industry body, WildFlowers Australia Ltd, becomes an integral part of the R&D process, nominating representatives to sit on the subprogram Industry Advisory Committee, coordinating collection of voluntary industry contributions, and communicating R&D outputs and outcomes throughout the industry.

Indication of industry's capacity for adoption of R&D outcomes and outputs

Many players in the industry are highly educated relative to other agribusiness sectors and have the capacity to access the outcomes of R&D projects. A wide range of technical information is available via the RIRDC website and publications to assist stakeholders, especially growers. Various industry associations, State Departments of Agriculture, and other stakeholders regularly host activities that foster information transfer and industry networking. These include websites, conferences, seminars and farm visits as well as newsletters and published booklets. However, this effort is not consistent across all states.

Reduced State government funded extension services have made it more difficult for the key stakeholders to be informed about and subsequently adopt R&D outcomes.

Broader approaches will be used to invite industry participation in R&D and to advertise the available resources and information sources developed through the RIRDC industry program. These will be channelled through the newly formed national industry body WildFlowers Australia Ltd.

3. History of the Wildflowers and Native Plants Program

The Rural Industries Research and Development Corporation has been supporting a program of research into wildflowers and native plants since 1991-92. Most recently, the Program has implemented the Five Year Plan for 2000-2005.

The focus within the 2000-2005 Plan has been on the following objectives

1. to understand, strengthen and develop markets
2. to improve existing products and develop new ones
3. to provide profitable and sustainable production systems
4. to enhance the human capital of the industry

Table 3.1 Relative financial inputs of RIRDC, research organisations and the industry to R&D 2000-05

RIRDC	Research organisations[2]	Industry	Total
$2.211M	$3.597M	$1.520M	$7.329M
30.2%	49.1%	20.7%	100%

Source of financial data: RIRDC

Table 3.2 Relative contribution to subprogram goals 2000-2006 (includes commissioned project)

Subprogram goal	**No. of projects[3]**	**% of total budget**
1. To understand, strengthen and develop markets	13	5.8
2. To improve existing products and develop new ones	32	68.7
3. To provide profitable and sustainable production systems	9	23.1
4. To enhance the human capital of the industry	23	2.4
TOTAL	77	100

Source of financial data: RIRDC

[2] This figure reflects the total dollars invested by research organisations, including the value of 'overhead' expenses.

[3] A small number of projects were terminated by RIRDC for various reasons. While included in the total budget figures, they have not been reviewed.

Table 3.3 Contributions against subprogram goals

Subprogram goal	% contribution by RIRDC	% contribution by research organisations	% contribution by industry
1. To understand, strengthen and develop markets	20.0	68.0	12.0
2. To improve existing products and develop new ones	29.5	50.6	20.0
3. To provide profitable and sustainable production systems	33.6	42.8	23.6
4. To enhance the human capital of the industry	30.2	49.4	20.5

Source of financial data: RIRDC

The key areas supported by the R&D Program during 2000-06 have been sorted into categories as follows:

Table 3.4 Key areas supported by the R&D Program during 2000-06

Category	No. of individual projects funded	% of total budget (RIRDC, research organisation and industry combined)
New variety or product development	24	67.9
Plant propagation or plant production research	4	13.0
Crop production research	2	2.7
Postharvest projects	5	7.5
Market and marketing studies	4	0.7
Market access, market development and market information	8	5.8
Industry development	5	1.7
Conferences - 4 conferences were supported – one was an international conference held in Australia and three were national conferences	4	0.9
Travel grants (researchers and growers)	21	0.5
TOTAL	77	100

Main achievements of the 2000-2005 R&D Plan

New products and varieties

The major focus has been on projects that develop new products or varieties, either through a dedicated breeding program or by selecting improved forms occurring in the wild or in plantations. This supported the need identified in 2000 to update the industry product range and mix. It also aimed to position the industry better in current and emerging markets. Many genera have received attention during 2000-2005 including *Actinotis*, *Boronia*, *Chamelaucium*, *Conospermum*, *Corymbia*, *Corynanthera*, *Eriostemon*, *Grevillea*, *Haemodorum*, *Ixodia*, *Leptospermum*, *Leucodendron*, *Scholtzia* and several tropical rainforest species. There were extensive breeding and selection programs to develop superior forms of *Corymbia*, *Grevillea*, *Leptospermum* and *Leucodendron.*

The new products developed by six of the projects are already being cultivated by commercial growers. These include rice flower, flannel flowers, wax flowers, boronia, leptospermum, and Scholtzia. Others developed through the 2000-2006 Plan have yet to move into wider commercial production. Some will achieve this within the typical 10 year time frame and others will need to be re-evaluated for their commercial potential. It is important to note here that several of the new varieties developed are also ideal landscape plants, and are being developed and commercialised as such. These include *Corymbia* hybrids, *Leptospermum* and *Grevillea*. 'Top up' funding should be considered for products with strong market potential.

Some research extended new varieties developed during the previous five year program and accelerated their commercialisation by broadening the production base. An example is the development of flannel flowers, which growers commended because the project resulted in growers achieving good returns, almost on a year-round basis. Several manuals developed through projects were singled out as being very useful to growers (for example the Eucalyptus and Riceflower grower manuals), and more such publications were requested by industry.

Some of the new technologies currently being developed by researchers will potentially 'short cut' the breeding process by using 'in vitro' methods to create new genetic combinations, or to multiply up large numbers of identical plants. Grafting desired varieties onto a rootstock more suited to local conditions was evaluated for one species *Eriostemon australasius* and this research is now being expanded to more species by another project (scheduled to continue until May 2009).

Plant propagation and nursery plant production

A small number of projects looked at improving plant propagation and production techniques, specifically for waxflower, eucalypts and Leucodendron (as a linked project to a more extensive Leucodendron breeding project).

Crop production

The knowledge base for growing many commercial species has been expanded by this R&D plan, through projects focussed on improving plant varieties, or plant propagation, as well as those that specifically targeted production issues. Improved nutrient management of waxflower increased both quality and production, while the tolerance of a range of Leucodendrons to Phytophthora disease was evaluated.

Markets and market development

The need for the industry to position itself better in current and emerging markets (both domestic and export) was among the key issues identified for attention during the life of the 2000-2005 R&D Plan.

The Australian cut flower best bets program, built on the success of the initial 'best bets' project, produced a list of products for which there was unsatisfied demand, and also assessed their current and future prices and listed nurseries where plants were available. The 2007 review identified that there was a high industry awareness of this project and that stakeholders generally valued it and wanted to see it as an ongoing program, regularly updated and extended to gather information for the domestic market.

A project to improve market access for Australian grown products via sea freight proved that this could be a viable option for selected products and determined a number of critical failures in the supply chain.

A video was produced to improve use of wildflowers by retail florists.

Some projects tackled very necessary but difficult areas like collecting reliable and accurate statistics. Two related projects aimed to improve the knowledge and statistics of flower exports from Australia and highlighted several areas requiring further work. Two other projects focussed on better understanding the US and Canadian markets and opportunities offered by them.

Industry development

Several projects assisted in bringing stakeholders together to share information and highlight future needs. Another identified the critical factors that impact on profitability, aiming to progress the need highlighted in 2000 for 'sound and readily available data and benchmarks on costs and returns to enable existing and would-be producers to monitor and optimise their profitability'. This project developed a manual to assist growers to benchmark their crops and sought to assist growers to apply this approach through workshops held in several states.

Industry participants in the 2007 R&D review requested better access to information for new players, and a stronger focus on improving information, training and support for existing growers. However, the industry survey indicated that a number of stakeholders do not regularly seek out available information on the RIRDC website.

Postharvest issues

Several projects addressed specific postharvest problems or provided information relevant across the industry. Attempts to overcome leaf blackening in proteas with ethanol vapour met with mixed success and concurrently overseas researchers developed a different strategy to overcome the problem. A manual of postharvest treatments for a wide range of products was produced and captured 'best available knowledge. This was recognised as an important resource during the 2007 R&D review, but it needs to be revised and updated regularly. Nitric oxide was found to be effective in delaying senescence in several species and appeared to act differently to the industry standard anti ethylene treatment of STS, but there appears to be no commercial outcome from this technique.

Conferences and travel grants

Several national and international conferences held during 2000-2005 were sponsored by RIRDC. By and large these were the only national conferences held for the flower industry in Australia during this time – the 6th and 7th Australian Wildflower conferences, and the International Protea Association Conference (Melbourne, 2004). Sponsorship of conferences was seen as very important by stakeholders who participated in the 2007 review. In addition, a number of travel grants enabled researchers and growers to attend conferences, in Australia and overseas.

Many projects have generated a sound base of knowledge (where there was previously none) on which subsequent development projects can be built. The next five year program might achieve more results and gain more benefit from investment to date by consolidating key areas before turning to new topics.

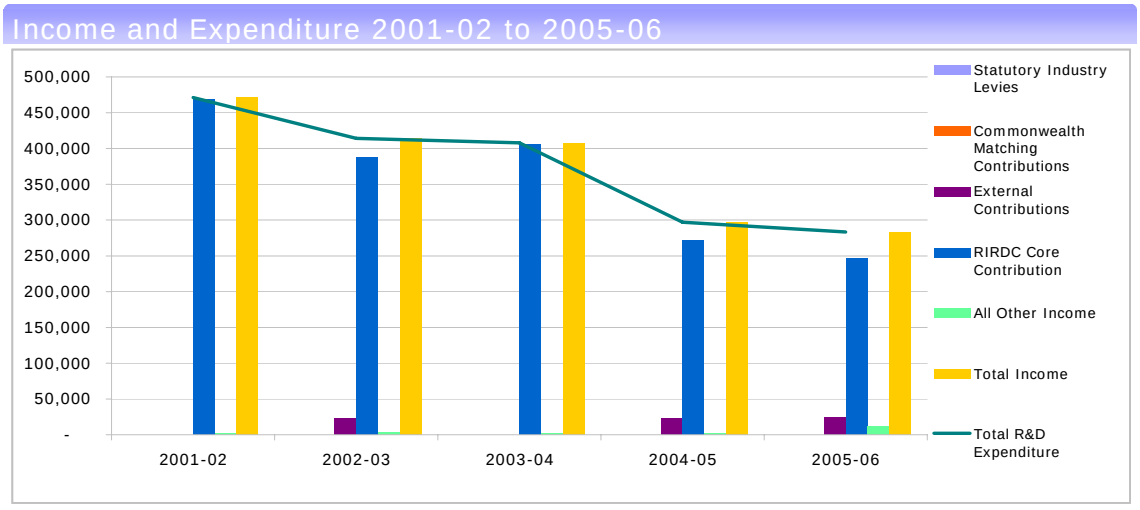

Chart 3.1 Income and Expenditure 2001-02 to 2005-06 (Source: RIRDC)

4. Analysis of Strengths, Weaknesses, Opportunities and Threats

The analysis of strengths, weaknesses, opportunities and threats (SWOT) was developed for the 'Australian Wildflowers Industry: Taking Stock and Setting directions' report published in 2005. This was prepared for the Australian Wildflowers Industry in partnership with The Department of Agriculture, Fisheries and Forestry by RidgePartners consultants and advisers as part of the Industry Partnerships Program, June 2005. The SWOT was developed from industry data and information obtained from stakeholders throughout Australia. A few additional items have been added (marked [#]).

The SWOT analysis

Strengths

- Access to new plant varieties and diverse gene pool
- Counter-seasonality to European and Israeli producers
- Climatic diversity across Australia extends the supply window
- Pre-existing cohesion amongst exporters to promote product
- Ability to produce and deliver high-quality product
- Industry participants are competitive and enterprising
- Expertise in Research and Development (but declining)
- Established R&D facilities
- Good reputation of Australian agriculture in Japanese markets[#]

Weaknesses

- High labour costs
- Increasing average age of industry participants
- Quarantine delays and costs
- Fragmentation of the industry
- Industry culture of independence
- Large numbers of very small growers – reduces economies of scale
- No coordinated industry planning
- Low level of industry cash funding of R&D[#]
- Commercialisation of R&D findings at insufficient levels
- Low margins
- Limited access to and high cost of cool-chain
- Reluctance of growers to replace old varieties with new and improved selections[#]
- Huge variability in grower commitment to commercial production[#]
- Low value of products relative to costs
- Limited promotion/and or branding
- Sub-optimal crop management[#]

- Lack of current, accurate industry data and statistics
- Lack of international competitiveness with less regulated developing countries
- High costs and long lead time to develop new products and varieties[#]
- High freight access and costs
- High value of the Australian dollar relative to competitors

Opportunities

- Industry cohesion through a peak national body – and the ability to leverage industry contribution with public funding
- Better supply chain coordination and "lean thinking"
- Ethical business practices sought by consumers
- Strategic management of the lifecycle of new products
- Reduction of labour costs through increased mechanisation
- International demand for wildflowers
- Freight cost advantages over African, Israeli and South American producers to Asian markets
- Regional water planning and access to government
- Communication and coordination between supply chain partners regarding product specifications and consumer demand
- Automated market intelligence systems to pre-empt consumer demand
- Expansion of South-East Asian markets
- Development of the domestic market
- Varietal research leading to new plant varieties for which intellectual property can be protected for the Australian industry
- Increased efficiencies through investment in postharvest technologies
- Targeted R&D funding towards projects with high commercial potential
- Coordinated marketing, including targeted release of new varieties to the market
- Use RIRDC as an industry resource
- Adopt technologies and infrastructure of the traditional flower sector

Threats

- Hobby farmers setting industry prices
- Inability to access labour
- Future access to water
- Increased non-tariff trade barriers
- Over-regulation
- Inability to implement industry codes of practice or quality standards demanded by consumers
- New pests and diseases
- Increasing competitiveness of South Africa, New Zealand and South America [where innovations and new products originally developed in Australia are adapted and compete in 'our' market slots[#]]
- Further increases in value of the Australian dollar
- Increase in fuel and freight costs
- Stagnation in Asian economies

Issues raised but not addressed by the R&D Plan

Several issues that were raised via the industry survey or at the national workshop have not been included in this Plan. Some reflect the long time frame required to develop new products for the industry. Others are more properly addressed by the industry through more focussed communication and lobbying efforts, by closer linkages with commercial providers and by stronger industry cohesion. The major constraints to industry profitability and competitiveness will need to be addressed by all stakeholders.

Research project timeframes are often too short

Most projects stop at the end of the funding but there is usually still a lot of work to be done. This especially applies to extending the information to industry (and perhaps packaging it in 'grower friendly' form) and to protecting and commercialising new plant varieties. Where the researcher has a continuing role in the wildflower industry, it may be possible to consolidate and extend the research outcomes, but not all researchers have this option. Many researchers make recommendations or identify 'areas for future work' at the end of their project reports and the industry needs to develop a mechanism to deal with the important issues highlighted.

Set commercially relevant criteria for assessing new projects and maximise commercial outcomes

Each new project must have commercially realistic and relevant outcomes. This especially applies to new product development, where commercially relevant selection criteria are needed, including acceptable yields, viable production inputs (such as water and fertiliser) and post harvest handling, and long vase life. Many breeding and selection projects will also develop products suited to pot plant or landscaping applications and any such market opportunities must also be supported. If a commercial partner is needed to ensure rapid transition to commercial reality, such partners need to be recruited well before the end of the project.

More commercially relevant outputs are needed

Researchers need to communicate with industry to determine the most appropriate extension process in order to maximise the adoption of research findings. They should aim to produce 'ready to use' information such as grower and nursery manuals, posters and factsheets.

As part of the review of the new R&D Plan, it is recommended that an industry workshop is held in 2010.

Adoption by industry

More widespread adoption of R&D outcomes and outputs by industry stakeholders is needed. Poor adoption remains a weakness, partly the result of contracting extension services and the challenges of working with a fragmented industry. There appear to be serious constraints on new varieties moving smoothly and quickly from research to commercialisation and successful cultivation by growers. While the R&D Program directly supports the development of new products, and tries to facilitate the commercialisation of these products, RIRDC (and the researcher) cannot always achieve this transition into the commercial world. This is the role of commercial operators, such as plant propagation nurseries, and indirectly of marketers who might drive the demand for these products and thereby expand the production base. The Australian wildflower market alone may be too small to make this commercially viable for more than a few products.

Profitable growers are the key to the future

Better informed and capitalised growers will be attracted to a more profitable and vibrant industry. This would increase the number of growers able to market high quality products profitably due to their better economies of scale and ability to fund infrastructure and plant new varieties. This is likely to increase market demand. More profitable growers are more likely to invest in future R&D in order to enhance their investment in the industry.

5. Five Year Plan

Vision

Our vision is:

- for the Australian wildflower industry to be nationally and internationally recognized as a reliable supplier of quality flowers and foliages and innovative products; and
- for the industry to be commercially focussed and sustainable through having the requisite skills and knowledge for efficient, profitable and sustainable production.

Mission

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

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

Objectives and goals

Table 5.1 Program objectives and goals

Priority	Objective	Goals – short term (next 2 years)	Goals – long term (next 5 years)
1	Provide profitable and sustainable production and management systems (50%)	1. Review past projects to identify which ones need further work to maximise benefits to industry 2. Develop improved production systems 3. Collate information to support industry development and training in order to increase profitability	1. Collate information to support industry development and training by increasing profitability 2. Collate information on improved production systems 3. Develop systems to support environmentally efficient and sustainable production

Priority	Objective	Goals – short term (next 2 years)	Goals – long term (next 5 years)
2	Improve product quality through postharvest care and quality standards (15%)	1. Develop product quality standards 2. Update post harvest information for the major products	1. Develop and implement improved postharvest handling, quality standards and on farm care
3	Assess and evaluate markets to improve commercial outcomes for the industry (10%)	1. Review past projects to identify which ones need further work to maximise benefits to industry 2. Conduct analyses of key markets	1. Conduct analyses of key markets 2. Assist industry to develop strategies to promote Australian grown wildflowers and native plant products to buyers
4	Improve existing products and develop new ones (15%)	1. Review past projects to identify which ones need further work to maximise industry benefits 2. Assist industry to create and market new and improved products.	1. Enable industry to understand markets for new, improved and 'reinvented' products
5	Enhance the human capital of the industry and consequent research knowledge and adoption (10%)	1. Improve access to R&D information through effective communication among current and potential industry stakeholders 2. Highlight R&D successes 3. Ensure training for industry stakeholders incorporates recent R&D outputs 4. Strengthen the people (human capital) of the Australian industry through the implementation of objectives 1-4	1. Maintain communication to industry stakeholders through diverse channels 2. Highlight R&D successes 3. Ensure training for industry stakeholders incorporates recent R&D outputs 4. Enhance the human capital of the industry through the implementation of objectives 1-4

The consolidation and expansion of current efforts towards developing an effective national industry body is critical to enable this new Five Year Plan to deliver maximum benefits for the wildflowers and native plants industry.

Objectives

Objective 1: Provide profitable and sustainable production and management systems (50%)

Background

The key challenge for the industry is to continue to improve profitability and increase demand in both domestic and export markets. On many plantations, inefficient production methods result in suboptimal yields of quality and readily marketable product. The margin between costs and returns from sales varies widely between enterprises and the true costs of growing a particular product are often unknown. This reduces the potential profitability of each enterprise and of the industry as a whole. Current production problems must be resolved and solutions widely adopted. More growers need to adopt and apply best management practices on farm. This will resolve many current industry weaknesses, such as poor reputation, poor buyer confidence and low profitability, and will lead to increased demand. A number of published industry resources need to be utilised by more stakeholders and some need updating.

Strategies

- Identify products already developed where outstanding production problems must be solved to expand profitable production
- Develop management strategies that address known on-farm risks that reduce profitability: focus on effective pest, disease, nutrition, canopy and irrigation management, to allow environmentally efficient production
- Develop more intensive growing systems that allow a greater return per unit area, e.g. greenhouse crops
- Identify means of optimising irrigation scheduling techniques for key wildflower crops
- Solve propagation issues faced for specific species

Targets and indicators

- Reliable information for industry about the economic fundamentals of growing flowers in Australia
- Propagation techniques available for Eucalyptus hybrids
- Best management strategies published and adopted by industry to optimise waxflower tubestock production, planting and field management
- Guidelines for optimum irrigation scheduling for three crops published by 2013
- Information on nutritional standards (leaf tissue) for a range of major crops, including waxflower, developed and readily available

Objective 2: Improve product quality through postharvest care and quality standards (15%)

Background

Highly variable product quality and reliability have long been identified as a major weakness of the Australian industry. Improved performance in this area is critical to ensure that buyers assign a high value for a perishable, mainly 'lifestyle' product, especially in an increasingly competitive marketplace. Specific postharvest protocols have been developed for many major products, and general recommendations are available for maximising postharvest vase life of products. The information presented to industry in the postharvest manual developed during the 2000-2005 Plan needs to be embraced by more stakeholders. The manual needs to be updated and expanded to cover new products. Quality standards need to be established for many of the major products to allow growers and sellers to understand the 'minimum market quality' that should be offered for sale, leaving exact details of product presentation to be negotiated between buyers and sellers. This is especially important now that established plantations are being sold to new owners who may not know what is expected. If product reaching wholesalers, exporters and buyers is of a more consistent quality and standard, there are major time savings in preparing product for sale and shipment, and a consignment can easily combine the product from several growers. This will enhance the reputation of the Australian industry. More consistent supplies of quality products are essential in order to expand domestic market share.

Strategies

- Provide up to date postharvest technologies and information to stakeholders
- Marketers and buyers to support efforts to raise product quality by requiring appropriate postharvest treatments and upholding product standards
- Develop standards to raise quality and consistency of major products

Targets and indicators

- Updated and expanded postharvest manual published giving the correct post harvest treatments for all major species, and including results of postharvest work funded during the 2000-2005 Plan
- Commercially relevant product specifications to improve quality and postharvest handling for 30 widely grown products
- Specific postharvest problems solved
- Educated market chain, including consumers, about quality products

Objective 3: Assess and evaluate markets to improve commercial outcomes for the industry (10%)

Background

To achieve more consistent returns there is a need to identify the most profitable crops for different regions and markets. Timely and ongoing market research is needed for both domestic and export markets to understand buyer needs and develop strategies to increase demand. Many growers rely heavily on export markets but costs are increasing, as is competition from lower cost producers. Therefore the industry needs to look at expanding its sales in the Australian domestic flower market, currently estimated to be 10% of the total market. However, many (local and overseas) florists and consumers are unaware of the product range and how to use them.

Strategies

- Review and monitor market demand for various products on both domestic and export markets
- Increase consumer awareness, education and demand for Australian grown wildflower products through education
- Identify and define barriers to market entry and seek ways to overcome them
- Conduct analyses of key markets (domestic and export) to allow trends, driving forces and opportunities to be recognised and exploited to increase profitability

Targets and indicators

- 'Best bet' products and growing regions identified to enable growers and marketers to plan ahead – focus on both domestic and export markets
- A course for florists designed to incorporate wildflowers
- Improved technologies for sea freight opportunities
- A method developed to gather market statistics, and review them every two years
- Understanding of one export and one domestic market by 2013

Objective 4: Improve existing products and develop new ones(15%)

Background

The industry is strongly aligned with the 'fashion' and 'lifestyle' sector where new and different products are in constant demand. The opportunity to develop new and exciting products from our native flora is currently underexploited, especially species endemic to tropical regions. However, this requires long term effort and investment that may be beyond the capacity of the industry to fund beyond a select few strategic products. However, many breeding and selection programs will also develop plants suitable for the pot plant and landscaping markets. Commercialisation of superior products in these markets will increase the profits achieved by Australian growers and RIRDC will consider supporting such efforts jointly with other parties.

There is also scope to 'reinvent' or improve existing products to better meet market needs. The previous 5 year R&D plan strongly supported this area. Greater emphasis could also be placed on species which achieve marketable yields within 6-10 months of planting and that can be cultivated more intensively. Growers must be more willing to invest in new crops and products and abandon those which are less profitable. Others in the value chain, such as plant producers (nursery industry), wholesalers, exporters and florists need to contribute significantly more support in cash and in kind. They also need to play a much stronger role in commercialising the outputs of research, to assure a commercial return on the R&D investment. Stronger linkages between research, trials and growing on-farm are needed to speed up adoption of new products and techniques.

Strategies

- Identify products developed that have strong potential to be adopted by industry
- Implement the breeding project aimed at producing a flower for festive occasions when red flowers are not readily available
- Support the development of new products which have the most likely chance of commercial success
- Improve the release of new products to industry by addressing IP issues and promoting availability via commercial plant propagators

Targets and indicators

- Booklet of Australian native cut flowers available
- New varieties of Leptospermum, Grevillea and Eucalyptus and red flowers for festive occasions evaluated and commercialised.
- Expanded production of selected products as a result of grafting onto different rootstocks
- Existing core products re-evaluated with consideration given to outstanding production, postharvest and marketing issues – forums of industry stakeholders held to identify critical gaps for six major products.
- Significant commercial cultivation of new varieties and products developed through the 2000-2005 R&D program

Objective 5: Enhance the human capital of the industry and consequent research knowledge and adoption (10%)

Background

There are encouraging signs that the industry is working harder to build cohesion to develop a national industry focus. This is needed in order to identify and regularly review industry priorities (including R&D needs) and to develop and coordinate strategies to solve major industry issues. Since the National Wildflower Summit in March 2007, there has been significant progress towards forming an effective national body.

Communication of accurate and relevant information is critical to enhance industry development. The RIRDC is seen as a highly credible source of independent information on R&D, as supported by the Program and as undertaken by other providers. The

national survey has indicated that the internet is not a practical medium for many stakeholders and a broader communication strategy is needed, utilising industry media and the newly formed industry body WildFlowers Australia Ltd. As the Program relies on voluntary contributions to support R&D projects, clear and timely communication of R&D outputs and outcomes to stakeholders is important to build industry commitment to R&D and to ensure that the Program achieves its objectives.

The industry survey identified industry development and training as a high priority. Present and new industry members often find it hard to access the available information on growing and marketing crops. The aim is for more industry players to access and apply available technical, economic and business information, and in doing so become more professional operators. The industry also needs to focus on collecting reliable statistics to record its size, production, value and market share, and to chart trends. New and strongly business focussed investors need to be attracted in order to revitalise and expand the industry.

Strategies

- Communication of RIRDC funded R&D projects to facilitate faster acceptance and adoption by industry, using multiple channels, with R&D successes highlighted to encourage increased participation in R&D projects
- Ensure that training programs (e.g. TAFE) for industry stakeholders, such as florists, have access to the most recent R&D outputs, and are able to utilise them.
- Create opportunities for industry organisations and individuals to develop and be involved in specific R&D projects relevant to their regions/products and to embrace national collaboration where possible.
- Provide leadership and R&D support for the development of cooperative approaches in R&D planning and implementation across the industry

Targets and indicators

- Improved and new channels for communicating RIRDC funded R&D to industry leading to a greater awareness and uptake of outputs and outcomes by stakeholders – for example, the WildFlowers Australia website (www.wildflowersaustralia.com.au), the *Australian Flower Industry* magazine and a more user friendly RIRDC website
- New Five Year R&D Plan developed and promoted to industry
- A national R&D workshop sponsored by RIRDC in 2011 to review progress and at least one national conference during the lifetime of this plan
- Useful information and materials for training courses for stakeholders, especially growers and florists

6. Wildflowers and Native Plants R&D Budget 2008-2013

An indicative Five-Year R&D Plan budget has been prepared assuming voluntary industry R&D contributions of about 25% of the RIRDC contribution in year one, one third of the RIRDC contribution in year 2 and one half of the RIRDC contribution in the following years. The budget from RIRDC is dependent upon contributions from industry, and allocations are likely to be reduced if these contributions are not received.

Table 6.1 Proposed Wildflowers and Native Plants R&D Budget 2008-2013

	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
REVENUES					
External Contributions	80,000	100,000	150,000	150,000	200,000
RIRDC Core Contribution	300,000	300,000	300,000	300,000	400,000
TOTAL REVENUE	380,000	400,000	450,000	450,000	600,000

Wildflowers and Native Plants Five Year R&D Plan
2008 to 2013

Pub. No. 08/114

RIRDC has supported the Wildflowers and Native Plants Program since it was established in 1990. Since 1995, the Program has invested over $15 million to support over 180 projects, with the RIRDC contribution amounting to $4.9M.

RIRDC is committed to the development of five year plans for each of its Research and Development Programs in keeping with the Corporation's Five Year Corporate Plan, and the National and Rural Research Priorities.

The Plan aligns well with the Federal Government's National Research Priorities and Rural Research Priorities and with RIRDC's Corporate objectives.

This R&D Plan was developed through a national industry survey followed by a national one day workshop with key stakeholders and members of the RIRDC Wildflowers and Native Plants R&D Committee.

This R&D Plan is an addition to RIRDC's diverse library of over 1800 publications and forms part of the Essential Oils and Plant Extracts Program that aims to provide the knowledge and skills base for industry to provide high, consistent and known qualities in their essential oils and plant extracts products that respond to market opportunities and enhance profitability.

RIRDC manages and funds priority research and translates results into practical outcomes for industry. Our business is about new products and services and better ways of producing them. Most of the information we produce can be downloaded for free from our website: www.rirdc.gov.au.

RIRDC Books can be purchased online or by phoning 02 6271 4100.

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