



**Australian Government**

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**Rural Industries Research and  
Development Corporation**

**New Animal Products  
R&D Plan  
2006-2009**

**Rural Industries Research  
and Development Corporation**

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# Foreword

This Plan is the second three year analysis of R&D priorities for the New Animal Products sub-program. It presents the rationale for the program that the Corporation manages on behalf of the Australian Government and industry, and provides all investors and researchers with a description of the future priorities of the Corporation.

Many industry representatives and researchers have provided inputs into the Plan and the Corporation appreciates their valuable contributions.

The Plan has three goals directed at developing new opportunities, stimulating industry partnership and adoption, and increasing competitiveness, capability and capacity. Strategies, major targets and performance indicators are recorded. Recent publications are referenced reflecting the scope of investments with respect to the number of species and activities along the production, processing and marketing chain.

**Dr Peter O'Brien**  
Managing Director  
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# 1. Purpose of the Plan

The purpose of the plan is to give direction to address the objective of the RIRDC New Animal Products sub-program (subsequently referred to as program) to accelerate development of viable new animal industries.

Specifically the purpose is:

- To present the way the goals of the Plan were developed
- To document R&D and industry development needs of stakeholders investing in new animal products
- To provide, investors, researchers and advisory personnel guidelines on R&D that will be funded
- To inform investors and researchers of the outputs of recent and current projects as a guide to the scope of R&D funded
- To encourage interactions between various new animal industry interests along the value-added chain.

In essence it is published by RIRDC for the Australian government for investors, industry stakeholders and researchers.

The Plan is the second for the New Animal Products program and reflects the requirements of RIRDC under the PIERD Act (1989).

The first Plan 2002-2005 has proved to be a sound foundation in guiding investment priorities. The development and direction of some of the new animal industries have changed during these three years making the need for a new Plan reflecting these changes.

The purpose has to respond to the R&D needs of over 40 prospective and fledgling livestock industries covering the supply, production, processing, marketing, industry development and training as prescribed as R&D activity in PIERD Act 1989.

Similar to the first plan the second Plan has a duration of 3 years only. Owing to the dynamic and sometimes abrupt changes that can occur in some of these new industries, and the entry of new industries, a longer horizon would be unrealistic if achievement of the major elements of the Plan is to occur. Various industry representatives supported this time-line.

## 2. Vision and Mission Statements

**Vision** is for viable prospective animal industries.

**Mission** is to encourage R&D investments for the growth and profitability of prospective animal industries, producing in a viable and innovative way quality products and services for national and international customers.

## 3. Contributions to the Plan

Information from publications and meetings form the basis for analysis of some of the industries (Appendix 1). These sources provided some of the issues and priorities for development and address some of the R&D options.

The above was supplemented by a written survey of 20 stakeholders including industry and R&D personnel. The return was 80%.

A copy of the draft Plan was then circulated to the survey respondents and other industry interests, and comments received have been considered in the final preparation of the Plan.

## 4. Developing the Plan

Besides the direct contributions referred to in Chapter 3 the Plan has been developed using components that give the framework – scope and character – to the New Animal Products program. This chapter provides information on various industries, past and present investments in the program since the commencement of the first Plan, and how the program is resourced and managed.

### 4.1 Industry Characteristics

There are over 40 animal species that RIRDC has had enquiries related to the possibility of R&D investments. These are given in Appendix 2 and are categorised on the basis of investments and the extent of time that has been given by RIRDC in recent years in response to project identification and implementation, and also various enquiries.

The scope covers the semi/tropical zones including crocodiles and turtles, the semi/arid zones for emus and camels while species such as kangaroo, ostrich, milking sheep, gamebirds, dairy goats, farmed rabbits and silkworms are harvested or farmed in various environments.

Many of the species are native including kangaroo, possum, wallaby and native geese. Some are feral such as camel and wildboar while some are now raised in captive/farm environments such as crocodiles, rabbits and emus.

Some species are exported live including buffalo, camels, ostriches, rabbits and dairy goats.

Processing includes use of abattoirs for meat from farmed livestock (eg emu, ostrich). Other animals are harvested with initial processing in the field (eg kangaroo and wildboar). There are some dedicated abattoirs for some species such as emu, ostrich, gamebird and rabbit but others such as buffalo and camel rely on using meat works that process mainly beef. Besides meat processed at abattoirs some co-products are value-added in Australia with the anti-inflammatory properties of emu-oil, for example, of considerable interest. Much of the goat and sheep milk processing occurs at factories; many of which process cow's milk. However, some of the sheep and goat milk is processed commercially on farm in a vertical integrated production/processing and marketing arrangement. Skins of some species are the most valuable commodity produced (eg crocodile, ostrich). Some skins are tanned in Australia and products developed (ostrich) while many of these are partially treated in Australia before exporting for leather production.

Many products are mainly exported (eg meat from ostrich and emus; some livestock skins). For others there are increasing export demands (eg goat cheeses, some gamebirds, crocodile). On the other hand many others rely on domestic markets (eg duck, sheep milk, rabbit and hare). Most meat is only for human consumption although 60% of the kangaroo meat by volume (30% in value) is sold for pets and the remainder for human consumption in Australia (20%) and other countries (80%).

## 4.2 Industry Values

The gross value of production at the farm gate is given in Appendix 3 and is based on reports and industry assessments. The total value of all these industries in 2004 was around \$240m as compared with \$180m in 2000.

Trends over recent years include:

- Continued increase in the human consumption of kangaroo meat although owing to reduced quotas due to drought the overall harvest of both meat and skins will decrease for some years
- The rapid increase in production of farmed rabbit meat and progressive increased returns for crocodile skins
- An overall continual growth in the production of goat and sheep milk products despite the withdrawal of some larger producers
- The commencement of a recovery of the ostrich industry which will in the short term continue based on the number of eggs incubated in 2004/05.

## 4.3 Industry Associations

For some (41%) of the industries classified as A or B in Appendix 2 there are national associations that are meeting at least annually. Some of these and other representative associations are given in Appendix 4. For many industries there is regular liaison between the executive of these and the program's Research Manager.

There is often a rapid turnover of President/Chairpersons and members who serve as executive of industry associations. There has been a 100% change in all the President/Chairpersons of the Industry Associations given in Appendix 4 as compared with 2002. Sometimes these changes bring different emphasis of industry needs and directions. For example supply priorities can be moved quickly to those of marketing and vice versa once new markets are accessed and developed. These fluctuations hinder in some instances long term planning that is needed for industry stability and fruitful R&D programs.

Many of the Associations have a national or state industry plan. These plans have many distinct components that are not included in this R&D Plan. These include:

- Formation and operating an Industry Association and the holding of Annual General Meetings
- Actions to increase membership and services to the industry
- Actions to service markets with livestock and products
- Ways of promoting products for local and export markets

- Ways of interacting with government in the development and revising regulatory protocols and funding of services
- Developing databases of industry related information and web-sites for public and private sector stakeholders
- Developing means of importing livestock and semen
- Identifying access to meat and milk processing establishments
- Negotiating with state and local governments for licensing of farming and processing
- Development of codes of practices for farming, transporting and processing.

#### **4.4 Developing the Industries and their People**

Since European settlement many livestock industries have passed through various stage of development. There is the innovative idea/concept when there are a low number of independent enterprises with little linkage. At that stage RIRDC has funded numerous feasibility studies to ascertain the likelihood of these fledging enterprises to build to profitable, viable industries (rabbit, hare, snail, silkworm, frog). Many industries might then move through phases of enthusiastic support, some growth, informal linkages and the drivers start to emerge. Often there comes the time when linkages become more formalised with a group of stakeholders formulating articles of an association some of which will cover all sectors – production, processing and marketing. RIRDC often assists in facilitating initial meetings. To help newly formed associations to reach as many stakeholders as possible RIRDC has provided co-funding for the production of industry Newsletters that publish both industry news and R&D inputs, outputs and outcomes.

There have been successes and failures in some enterprises raising or processing the livestock species included in the program. In the early stages of some industries stock costs are exorbitant, as supply is limited. The value of stock in these stages far surpass the value of the commodities and some investors have suffered poor dividends. In some instances animals have been raised in the wrong climatic environment but this situation eventuates because Australia is a large island where investors are scattered and want to establish production enterprises relatively close to population centres. The circumstances are further exacerbated when stock have to experience lengthy transport to far-away processing works. Fortunately many enterprises have been through the high costs initiation phase and recent research on financial indicators show a favourable internal rate of return and benefit/cost ratios for some industries.

The human resource base of the industries has people of varying experience from traditional livestock producers and processor/marketers that wish to diversity to new entrants to primary industry who invest in a relatively small amount of land and do not have access to best practice procedures. Some producers have mixed enterprise farms with many of these having off-farm income; others might rely specifically on a single enterprise consisting of harvest/raising, processing and marketing products of one

livestock species. There are some examples of this vertical integration in the sheep milk, dairy goat, crocodile, kangaroo, ostrich, farmed rabbit and gamebird industries. Some of these enterprises provide breeding, raising and processing for other farmers (eg farmed rabbit, dairy goat, ostrich and crocodile).

There is always a need for these stakeholders to have improving access to information and training in both business and technical skills. Obtaining benchmark information on costs, returns, constraints and opportunities for various industries and sometimes across industries provides guidelines to assist improvement in management. Facilitating industry representation at appropriate conferences, meetings, and workshops, nationally and internationally are worthwhile RIRDC investments.

## **4.5 Achievements from the ‘New Animal Products’ Plan 2002-2005**

The previous Plan had four objectives and a total of 16 major targets. There have been 25 research projects completed during 2002-2005 and 23 that have commenced and are still in progress. The investment in research projects has been \$2.89m (87% of the total program investment) of which 23% has been spent on Objective 1 (markets), 15% on Objective 2 (processing), 51% on Objective 3 (production) and 11% on Objective 4 (information transfer, industry development).

The achievements, outputs and outcomes of the projects addressing the major targets are given in Appendix 5. All but two of the targets have been addressed during the past three years. In respect to these two targets currently a commissioned project is being considered to address meat science (2c) and although a commissioned project addressed transport (1b) and distribution (1c) the emphasis was placed on the latter. There were similar number of projects contracted for Objectives 1, 2 and 4 but considerable more in Objective 3 owing to the high investment in genetic, reproduction and nutrition R&D.

The investment in travel has not been included in Appendix 5. There was financial support given to six industry representatives, all for overseas travel, and for six research personnel, two of whom travelled overseas and four within Australia.

Of the relevant projects completed in three years nine outputs have had some adoption, one of which is being commercialised, five will not have outputs readily adopted but some have pointed to further research, five still have possibilities for adoption, and six were information projects such as benchmarking.

## **4.6 Resourcing and Managing the Program**

The program has been funded during the three years by RIRDC (36%), Industry (26%), and Research Agencies (38%). It is of interest to note that those proportions are similar to that reported in the first Plan – RIRDC (35%), Industry (22%), Research Agencies (43%) – and again demonstrates RIRDC as a leverage funding role. The RIRDC contribution is mainly from the Australian government Core funding with support of levies. A statutory levy is now in place for kangaroo harvested for human and pet

consumption which is raising about \$120,000 per annum. Some of the funds raised by statutory levy for residue testing of ostriches and emu meat is diverted to R&D and this provides about \$12,000 per annum. Effectively the core funding in the program is currently at 32%, industry contributing 30% and research agencies 38%.

The program is supervised by a Research Manager who operates within the RIRDC Corporate Plan (2003-2008) and is guided by outcomes from meetings and communication with industry organisations, owners/managers of enterprises along the value chain, investors, research agencies and researchers.

# 5. The Key Strategies for R&D

## 5.1 SWOT Information

A summary of information for the different SWOT components is given in Appendix 6. The information is based on workshops, publications and surveys referred to in an earlier chapter.

## 5.2 SWOT Analysis

Often the tabling of SWOT information remains a listing that is not well linked with strategies. In the document a SWOT analysis is used as a basis for deeper appraisal to develop overall industries strategies (Appendix 7).

The analysis includes 'using Strengths to maximise Opportunities; using 'Opportunities to overcome Weaknesses'; and using 'Strengths and Opportunities to overcome Threats'.

## 5.3 R&D Strategies

Strategies given in Appendix 7 include those that can be addressed by R&D and also those that require other activities such as commercial investment, promotion, marketing, industry consultation, regulations etc. Only the R&D strategies are addressed in Chapter 6.

## **6. The R&D Plan for 2006-2009**

The goals of the Plan is to accelerate the development of viable new animal industries. Each goal includes the R&D strategy, major targets and performance indicators. The Goals are linked to the Corporations's Corporation Plan 2003-2008.

The Plan is based on the familiar model of the value added chain comprising links representing for example, developing markets, improving processing, continuity of supply and increased productivity.

The R&D Plan (2006-2009) will have goals to:

- Develop New Opportunities
- Stimulate Industry Partnership and Adoption
- Increase Competition, Capability and Capacity

## Goal 1: Develop New Opportunities

### Background

The development of new opportunities is Goal 1 of the RIRDC Corporate Plan. The New Animal Products program addresses this goal and that of the National and Rural research priorities in developing new production systems, utilising science in developing new products and augmenting market access systems.

Strategies	Major Targets	Performance Indicators During the period 2006-2009
<ul style="list-style-type: none"> <li>• Marketing R&amp;D</li> <li>• Product development</li> <li>• Feasibility studies for prospective industries</li> <li>• R&amp;D to improve quality assurance</li> <li>• R&amp;D in production systems and components</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in volume and access for export markets. Increased supply for domestic markets</li> <li>• Innovative value added products</li> <li>• Assessment of the potential new industries</li> <li>• Quality improvements in meat and skins</li> <li>• Improved nutrition, reproduction, breeding and health</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of 15% of production traded</li> <li>• Innovative value added products for 3 new animal species</li> <li>• Up to three new potential industries evaluated</li> <li>• Improved grading of skins</li> <li>• Higher productivity from one new feeding system, increased artificial insemination rates of at least 20% in conception of farmed rabbits and genetic gain in at least 3 species</li> </ul>

## Goal 2: Stimulate Industry Partnership and Adoption

### Background

The adoption of new technologies and the utilisation of industry partnership are within Goals 2, 3 and 4 of the RIRDC Corporate Plan. This New Animal Products goal is encouraging increased investment and involvement from industry partners, increasing the focus on customers demand, facilitating adoption and commercialisation, and benchmarking to utilise data and information for business improvement.

Strategies	Major Targets	Performance Indicators During the period 2006-2009
<ul style="list-style-type: none"> <li>• Involvement in R&amp;D planning and implementation by value chain participants</li> <li>• Benchmarking in production and processing to identify R&amp;D and establish standards</li> <li>• Use consumers and industry to assess R&amp;D results in product developments</li> <li>• Encourage greater adoption of outputs</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in the participation and investments of industry in R&amp;D</li> <li>• Benchmarking surveys, along the value chain including some international comparisons</li> <li>• Support for R&amp;D with consumers and industry</li> <li>• Increased adoption and commercialisation and support of R&amp;D outputs</li> </ul>	<ul style="list-style-type: none"> <li>• Increase to 30% in the contribution from industry in R&amp;D</li> <li>• Benchmarking of up to 6 new animal industries</li> <li>• Assessment of products in two locations</li> <li>• Assessment of changes in practices as outcomes from the R&amp;D outputs</li> </ul>

## Goal 3: Increase Competitiveness, Capability and Capacity

### Background

Increasing competition, capability and capacity are within Goals 3 and 4 of the RIRDC Corporate Plan. The New Animal Products goal is about building the abilities of researchers and industry leaders and facilitating wider availability of information.

Strategies	Major Targets	Performance Indicators During the period 2006-2009
<ul style="list-style-type: none"> <li>• Use post-graduate and post-doctoral personnel to increase R&amp;D capacity</li> <li>• Additional R&amp;D to communicate value and uniqueness of products thereby avoiding some negative publicity</li> <li>• Encourage international linkages for researchers and industry participants</li> <li>• Communicate increased R&amp;D information for industry participants</li> </ul>	<ul style="list-style-type: none"> <li>• Postgraduate and post-doctorates in R&amp;D projects some of which would be in industry environments</li> <li>• Society informed of R&amp;D related to nutritional value and safety of products developed in satisfactory environmental and welfare conditions</li> <li>• More international linkages for researchers and industry representatives</li> <li>• More interaction with industry</li> </ul>	<ul style="list-style-type: none"> <li>• Funding within projects of three new post graduates and the funding of three post doctorates in projects</li> <li>• Production of Information Reports for at least six industries – for society and industry</li> <li>• Funding of at least three industry representatives and three researchers on international visits/conferences</li> <li>• At least two workshops with industry participants</li> </ul>

## **7. The R&D Program and the Annual Operating Plan**

Annual Operating Plans allocating funds for R&D in the program will be based on this three year Plan. Information given in the RIRDC's Annual Operating Plan and the Research Priorities documents will reinforce the strategies and targets of the Plan. The number of targets that will be researched between 2006-2009 will depend on the annually approved funding. Priorities could change during the period depending on industry development, changes in industry leadership, R&D outputs, and industry outcomes from adoption of outputs from current projects. It is anticipated that 70% of the RIRDC funding will be spent on Goal 1, 15% on Goal 2 and 15 % on Goal 3.

# 8. Appendices

## 8.1 Appendix 1: Publications and Meetings that Contributed to the Plan

- RIRDC Corporate Plan 2003-2008
- Crocodile Nutrition Annual Meeting of industry representatives and researchers
- Kangaroo Industry Strategic Plan 2005
- Australian Ostrich Association AGM; November 2004
- Farmed Rabbit Industry of Australia AGM; July 2004
- Crocodile Specialist Group – International Meeting; May 2004
- Adding Value to New Animal Product Supply Chain 2004, RIRDC Report 04/166
- Progress for Commercialisation of New Animal Products Research and Development 2004; RIRDC Report 04/150
- Opportunities for Exporting Gamebirds 2003; RIRDC Report 03/106
- Dairy Goat Farming Practices 2003; RIRDC Report 03/057
- Distribution of Meat Products from Prospective Australian Industries: crocodile, emus, gamebirds, rabbit, hares and snails 2003; RIRDC Report 03/023
- The Kangaroo Industry – Its image and market 2003; RIRDC Report 02/166

## 8.2 Appendix 2: The Scope of Animal Species Addressed in the Program

Category	Description	Animal Species
A	Current R&D Investment relatively high	Crocodile, kangaroo, milking sheep, ostrich, farmed rabbit, silkworm
B	Current R&D or recent Investment medium	Camel, dairy goat, gamebird (duck, goose, guinea fowl, pheasant, quail, squab, turkey), emu, snail, turtle
C	Current Feasibility studies or lower investments on fledgling enterprises	Catosylus mosaicus, frog, mussel, witchitty grub, yabby
D	Past Feasibility studies, preliminary proposals or R&D enquiries	Antelope, beefalo, bison, cane toad, earthworm, fox, goanna, guinea pig, hare, llama, magpie goose, marron, mutton bird, possum, snake, wallaby, wild boar, yak

### 8.3 Appendix 3: Farm Gate Values of Some of the Industries in the Program

Industry	Products	Value \$m			
		1999/2000*	2003*	2004*	2003/2004** or 2004
Kangaroo	Meat	41.0	62.0	49.0	49.5
	Skin	22.0	27.0	23.0	23.3
Ostrich	Meat	6.0	3.0	3.3	2.5
	Skin	1.2	1.6	2.3	NO
Crocodile	Meat	0.8	1.1	1.8	0.5
	Skin	4.5	5.0	7.0	8.2
Rabbit (farmed)	Meat	0.9	2.5	4.0	2.1
Emu	Meat and Oil	2.5	2.5	1.0	1.0
Camel	Meat	0.2	0.1	<0.1	<0.1
	Livestock		0.2	<0.1	<0.1
Duck	Meat	23.0	36.0	34.0	34.3
All other Gamebirds	Meat	44.0	56.0	49.0	49.6
Goat	Milk for Processing	2.5	5	4.5	4.8
Sheep	Milk	0.8		1.2	NO

\* From annual estimates obtained by RIRDC from industry associations and leading enterprises

\*\* From part of an interim report prepared by ABARE (May 2005) in RIRDC's Project ABA-17A. Main sources of information from Levies Revenue service, ABS, ABARE, RIRDC publications, Industry Associations

NO Not obtained.

## **8.4 Appendix 4: Industry Associations that Relate to the Program**

### **Industry Organisations**

- Kangaroo Industries Association of Australia, Chairman, Michael Mulligan, 22 Churchill Street, Auburn NSW 2144 Phone (02) 9748 2291
- Central Australian Camel Industry Association, Executive Director, Peter Seidel,
  - PO Box 8760, Alice Springs NT 0870 Phone (08) 8951 8183
- Australian Goat Milk Association, Chairman, Dr Alexander Cameron, 35 Cameron Road, Clayton Vic 333 Phone (03) 5286 1211
- Emu Farmers Federation of Australia, Secretary, Arthur Pederick
  - PO Box 57, Wagin WA 6315 Phone (08) 9861 2060
- Farmed Rabbit Industries of Australia, President, Peter Hepples, 90 Shellcotts Road, Yanakie Vic 3960 Phone (03) 5687 1450
- Australian Ostrich Association, President, Michael Hastings, 'Tooronga', 580 Cressy Road, Winchelsea Vic 3241 Phone (03) 5267 2010

## 8.5 Appendix 5: Project Achievements

Status	Brief Title	Objective*	Target**	Some Outputs/Outcomes
Final Report	Export of Gamebirds	1	a	Some markets identified and new ones being serviced
Final Report	Kangaroo Meat Specification	1	a	Increased meat trading domestic and international for human consumption
Final Report	Buffalo Meat Specification	1	a	Being used nationally and internationally
Current	Skin Export Markets	1	a	International visits by industry and researchers
Current	Farming and Marketing Goat and Sheepmilk Products	1	a	
Current	Markets for Meat	1	a	
Final Report	Distribution of Meat – Domestic Markets	1	c	Ways of improving distribution of some meat products advanced but little adopted as yet
Final Report	Distribution of Meat – Export Markets	1	c	The research highlighted for the products included eg farmed rabbit that there were issues for government to consider if export was to proceed. The project concluded at that point.
Current	Uses of Byproducts	2	a	
Final Report	Novel Flavours for Meat Products	2	b	After workshoping with industry there is a need to continue education and promotion of the supply, handling, and opportunities for exotic game meats for the food service sector and the consumers.
Final Report	Kangaroo Image	2	d	Many communication products well received by industry
Final Report	Kangaroo Meat Quality	2	a	Flavour the predominant factor in fluency acceptability of grilled kangaroo meat. Improved methods in meat processing being adopted.
Current	Kangaroo Image	2	d	
Current	Trace elements in Crocodile products	2	d	
Final Report	Improving Ostrich hides	2	a	A benchmark skin documentation based on seven principles of a HACCP QA system. Covers farming, transport, lairage, slaughter, curing, tanning and skin marketing
Final Report	Processing Crocodile skins	2	e	Recommendations are made on short and long term preservation that are being adopted. There was no benefit from fleshing – removal of meat and fat from the skin
Current	Tanning Ostrich skins	2	d	
Final Report	Value Adding	2	f	Seven enterprises were evaluated. Genetic improvement and livestock identification and traceability systems have large impacts on supply chains

Status	Brief Title	Objective*	Target**	Some Outputs/Outcomes
Final Report	AI in Alpaca	3	a	Advances were made in the collection, characterisation presentation and insemination of alpaca semen
Final Report	Improved Farmed Rabbit Genetics	3	a	Survival, growth rate and size of litters increased and breeders sold to industry
Final Report	Development of Silk Production – Semi tropical	3	a	Silkworm varieties were evaluated, mulberry varieties determined, an artificial diet developed and a mulberry shoot harvested fabricated
Final Report	Sheep Milk and Products	3	a	Productions measured in crosses of East Friesians, Awassi, and Merinos. A mould-ripened Camembert style cheese was developed and being readily sold domestically
Final Report	Crocodile Farming	3	a	The main outputs include the initial development of an alternative feeding system, the development of an information package 'Crocprofit' and the second stage of development of an electrical stunning equipment
Final Report	Breeding Milking Sheep and Dairy Goats	3	a	Breeding schemes advanced. As yet to be widely adopted
Final Report	Genetics in Milking Sheep	3	a	Hereditably estimate determined but precision would have been improved if more reliable records were available
Final Report	Genetic Improvement in Crocodiles	3	a	Crocodile breeding values and a crocodile selection index were determined. The response to selection was predicted to have a \$324 increase in profit per annum per pair
Current	Yabby Breeding	3	a	Business Plan developed. Seeking commercialisation
Current	Ostrich & Emu Reproduction	3	a	
Current	Nutrition of Crocodiles	3	a	Some improved pellets have already been developed
Current	Ostrich Nutrition	3	a	
Current	Turtle Breeding	3	a	
Current	Genetic & Reproduction in Buffalo	3	a	
Current	Silk Production Temperate	3	a	
Current	Breeding for Disease Resistance in Farmed Rabbits	3	a	Improvement in genetic resistance to some diseases in grower rabbits with methodology now being extended to breeding does
Current	Extensive Production of Edible Snails	3	a	Some advances are occurring in feeding systems and management practices
Current	Commercial Breeding Program for Rabbits	3	a	Genetic improvement program successfully transferred to industry operator. Benefits of breeding program distributed to industry via seed stock sales
Current	Genetic Improvement of Milk sheep	3	a	

Status	Brief Title	Objective*	Target**	Some Outputs/Outcomes
Current	Management and Products for Milkshoop	3	a	
Final Report	Goat Milk Production	3	b	Various technical and commercial aspects of production, processing and marketing are report upon and some have already been adopted
Current	Crocodile Breeding Pen Design	3	c	
Final Report	Kangaroo Pet Meat Survey	4	a	40% of vets and 80% of breeders considered there was a high level of importance of including fresh food in pets diet and there was a high level of interest in kangaroo meat as a product for animals with dietary intolerance and when a low fat diet is required
First Report	Commercialisation of New Animal Products	4	a	A range of funding sources are identified for effective research, development and commercialisation
Current	Feasibility for edible frogs	4	a	
Current	Feasibility Study – Witchety Grubs	4	a	
Final Report	Benchmarking	4	b	Production benchmarks have been determined for crocodile, squab, and yabby. Processing benchmarks were also calculated squab
Final Report	Benefit Cost of Rabbit R&D	4	b	Satisfactory Benefit/Cost IRR (15%) and (3.7) have been achieved
Final Report	Commercial Safari Hunting of Australian Game	4	b	Up to \$5m annually may be contributed by clients of commercial safari hunting. A framework is developed for commercialisation of feral game animals in Australia
Current	Value of Emerging Industries	4	c	Interim Report released

- \* Objective 1 To increase market penetration and development
- \*\* Targets - (a) markets (b) transport (c) distribution
  
- \* Objective 2 To improve processing, production development and diversification
- \*\* Targets - (a) new products (b) safety(c) science (d) efficiency (e) processing (f) value chain links
  
- \* Objective 3 To improve supply and productivity
- \*\* Targets - (a) genetics/nutrition/reproduction (b) continuity of supply (c) management systems
  
- \* Objective 4 human capital To facilitate information transfer, industry development, and community awareness
- \*\* Targets - (a) feasibility studies (b) new industries (c) publications (d) travel

## 8.6 Appendix 6: SWOT Information

### Strengths

- Raw products are healthy and safe – clean green image (All)
- Production and processing contribute to the rural economy and regional development (All)
- Production and processing are environmentally sustainable (All)
- Many consumers willing to have initial eating experience with new products (Most)
- Low level of endemic diseases (Most)
- Strong R&D capability and capacity (Most)
- Extensive communication of outputs by reports, meetings etc that include technological developments that are more rapidly gained than by competitors (Most)
- Investment in postgraduate and postdoctoral positions in projects (Most)
- Domestic marketing systems effective (Most)
- Investors are skilled, capable, committed and willing to take risks (Most)
- Producers are innovative, rational in selection of farm size and some multiskilled through the value chain (Some eg crocodile, milk products, ostrich)
- Species are native and adapted to the environment (Some eg emu, kangaroo, crocodile)
- Satisfactory supply (Some eg gamebirds) although some increasingly not meeting demand (Some eg milk products, emu, rabbit)
- Effective breeding programs (Some eg rabbit, dairy goats)
- Products are unique for niche markets (Some eg kangaroo, emu, crocodile)
- R&D co-ordinated at a federal level (Some eg emu, ostrich, crocodile)
- Satisfactory processing facilities (Some eg gamebird, goat and sheep milk)
- Increasing successful export marketing (Some eg kangaroo, emu ostrich, crocodile)
- Some industries have learnt after having been through a ‘boom and bust’ experience and are now progressing with satisfactory productivity (Some eg ostrich, emu)
- Industry leadership strong, national organisations formed and support for R&D (Some)
- Strong government consultation (Some)

### Weaknesses

- Insufficient funds for common industry endeavours (All)
- Limited funds for R&D (Most)
- Industry size too small and often insufficient amount of products to efficiently export (Most)
- Genetics not as improved as many competitors (Most)
- Insufficient investment because size of domestic market small due to a relatively low population (Most)
- Insufficient marketing skills and development research particularly for export markets (Most)

- Lack of interaction and co-operation along the supply chain (Most)
- Reliance of producers on off-farm income (Some eg Rabbit, camel, emu, ostrich)
- The absence of national associations and instabilities of same (Some eg crocodile, gamebirds)
- Location not suitable in some instances (Some eg dairy goats, ostrich)
- Limited benchmarking (Some eg kangaroo, crocodile, gamebirds)
- Supply of livestock and products insufficient for demand (Some eg crocodile, kangaroo, milk products)
- Processing and allied infrastructure diminishing (Some eg ostrich, emu)
- Insufficient information for industry participants (Some eg rabbit)
- Product variability, insufficient quality control (Some eg milk products, camel)
- Reliance mainly on one product (Some eg rabbit, emu)
- Insufficient product differentiation (Some eg kangaroo, milk products)
- Inconsistency between states laws and regulations (Some eg emu, crocodile)

## Opportunities

- Product development for consumers – value adding for meats, skins, oils and milk products (All)
- Further production, processing and market development R&D (All)
- Increasing capacity and capability for R&D (All)
- Using existing capacity and capability for research in nutrition, breeding, health and reproduction (All)
- Communicating industry and R&D information (All)
- Encouraging potential investors to develop business plans before investing (All)
- Training for industry and appropriate national and international visits (All)
- Assessing the feasibility of new industries (All)
- Funding of commercialisation of R&D outputs (All)
- Informing society on the environmental soundness of the industries (All)
- Taking advantage in trading of Australia green image and unique products (Most)
- Involving more participants in the value chain in R&D planning and implementation (Most)
- Increasing domestic marketing of products likely to be traditional for ethnic groups and aboriginals (Most)
- Taking advantage of ‘free’ trade agreements (Most)
- Improving standards of quality assurance of products (Most)
- Increasing exposure through tourism and travel (Most)
- Upgrading production management systems particularly artificial insemination, grazing manipulation, milking and house shed design (Some eg rabbit, ostrich)
- Further product development for producers – feeds, handling devices (Some eg, crocodile, ostrich)
- Increasing industry training in skills (Some eg kangaroo, silkworm, milk products)

## Threats

- Exotic Diseases (All)
- Insufficient R&D funding from RIRDC (All)
- Continued reduction or elimination in research inputs from state and federal government R&D agencies (All)
- Unfair competition from subsidised imported products (All)
- Disruption of market access particular the growing market in Asia (All)
- Changes to demographic – more movement of labour and infrastructure investment out of rural areas (Most)
- Effect of drought on survival, reproduction, feed prices, quota members (Most)
- Insufficient confidence of the consumer in cooking satisfactorily new meats (Most)
- Unconfirmed environmental threats related to some livestock, and unfounded threats by animal liberation interests; both providing negative publicity (Some eg kangaroo, camel, gamebirds, farmed rabbits)
- Insufficient product quality assurance (Some eg milk and meat products)
- Competition from other countries producing same of similar products (Some eg ostrich, crocodile)
- Competition in Australia with traditional animal products and between new animal products (Some eg meat and milk products)
- Reduction of processing and harvesting staff due to a buoyant Australian economic (Some eg kangaroo and other species meat processing works)
- Abolishing legally the use of feeding unprocessed animal feeds (Some)
- Domination within a particular industry by a few enterprises (Some)
- Collapse of existing strong national industry associations (Some)

## **8.7 Appendix 7: SWOT Analysis – Strategy Development**

### **Using Strengths to maximise Opportunities**

- Use R&D capability for product development and production innovation
- Use post-graduate and post-doctorate personnel to increase R&D capacity
- Use initiatives of investor, industry associations and leadership in communications, market research, adoption and commercialisation
- Assess feasibility of new industry by seeking further R&D capability
- Exploit trade agreements by using investors capabilities and communicating the value and uniqueness of products
- Use willingness of consumer to assess product developments

### **Using Opportunities to overcome Weaknesses**

- Develop more international linkages to improve identification of market signals
- Overcome lack of interaction along supply chain by including more participants in the chain in R&D planning and implementation
- Increase information for industry participants by exploiting communication resources
- Increase benchmarking by utilising R&D capability

### **Use Strengths and Opportunities to overcome Threats**

- Minimise disease threats by appropriate government consultation and industry communication
- Avoid negative publicity on environment or welfare by communicating the environmental sustainability, health value and R&D in management systems
- Increase quality assurance by utilising R&D capability
- Minimise the effect of reduction in research inputs by state and federal government R&D agencies by investing in appropriate training in tertiary institutions and industry establishments
- Identify new production management systems and conditions to reduce the effects of droughts
- Increase market research to retain and expand access for innovative products

## 8.8 Appendix 8: Some Recent Publications

Title	RIRDC Publication No
Dairy Goat Manual	02/025
Shelf Life and microbiological safety of selected new and emerging meats	02/038
Benchmarking for New Animal Products: Crocodile, Squab and Yabby	02/113
Markets for Skins and Leather	02/142
Marketable Products for Sheep Milk	02/143
Farmed Rabbit in Australia	02/144
Kangaroo Pet Meat Survey	02/145
Improved Breeding in Dairy Goats and Milking Sheep	02/150
The Kangaroo industry – Its image and market	02/166
Distribution of meat products: Crocodile, Emus, Gamebirds, Rabbit, Hares and Snails	03/023
Artificial insemination in Alpacas	03/104
Increase in Autumn and Winter milk production in Dairy Goats	03/105
Opportunities for exporting Gamebirds	03/106
Rabbit farming – An evaluation of the Crusader R&D Program	03/144
New Animal Products – Completed Projects in 2003-2004 and Research in Progress at June 2004	04/067
Safari Hunting of Australian Exotic Wild Game	04/108
Farmed Saltwater Crocodile	04/147
Programs for commercialisation of new animal products research and development	04/150
Meat quality of kangaroo	04/151
Improved Preservation and Early Stage Processing of Australian Crocodile Skins	04/164
Adding Value to New Animal Product Supply Chain	04/166
Crusader A production system for Australian Farmed Rabbits	05/038
Kangaroo Industry Strategic Plan 2005-2010	05/108
Alternative Meats–novel flavours, products and safe delivery	05/140
Dairy Production and Farming Techniques for the Sheep Milking Industry	05/142
Silk Production in Australia	05/145
Crocodile Farming Research – Hatching to Harvest	05/152
Distribution of meat products for prospective animal industries	05/154