



**Benchmarks for  
New Animal Products  
Emu & Ostrich  
Production**

**A report for the Rural Industries Research  
and Development Corporation**

by David Michael

September 2000

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# Foreword

This study is about benchmarks for new animal product industries. It aims to improve the standard of business management in new animal product industries through the derivation of business enterprise benchmarking data at the production and processing levels. It is the first in a planned three year series of studies covering several new animal product enterprises.

The report provides insights into management practices and processes employed by emu and ostrich producers.

Both industries are in an early stage of development and in transition as they attempt to cope with volatile economic conditions. Despite the difficulties facing these industries it is apparent that excellence in farm management coupled with improved marketing and more innovation can generate profitability and viability. RIRDC's role is to help producers and processors to create more efficient supply chains.

This project was funded from RIRDC Core Funds which are provided by the Federal Government and is an addition to RIRDC's diverse range of over 600 research publications. It forms part of our New Animal Products R&D program, which aims to accelerate the development of viable new animal products industries

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**Peter Core**  
Managing Director  
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# Acknowledgments

This study was conducted with the significant cooperation of emu and ostrich producers and processors who responded to the survey. In our field visits to Western Australia in particular we obtained valuable insights into commercial practices and the reality of problems and conditions faced by producers. Some producers put significant work into their responses to the survey. In addition, we received valuable help from the Australian Ostrich Association, Terry English in particular and the Emu Farmers Federation of Australia.

Carmen Michael carried out data management, entry, analysis and modelling and added significant value to the interpretation of data that was not always easy to work with.

The Manager of the New Animal Products Sub-Program, Dr Peter McInnes, helped keep us informed of new developments in the industry including field days and special events.

## Preface

There are two parts to this report:

Part A: Emu Production Benchmarks

Part B: Ostrich Production Benchmarks

Data for these reports were collected from a combination of on-site visits, mailed out surveys, attendance at industry field days and numerous follow-up telephone calls and e-mails to potential respondents.

This report follows on from an *Inception Report* produced in March 2000 and which describes the design of an effective benchmarking program for the new animal product industries. The *Inception Report* proposed that a generic survey be conducted for all new animal product industries. The generic approach would mean that questions would not be industry specific and this is likely to be the nature of future benchmarking surveys.

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**PART A**

**EMU PRODUCTION BENCHMARKS**

# Executive Summary

This section describes the results of a survey of the work practices, processes and general operating environment faced by emu producing enterprises in the year ended June 1999 in Australia. Because the survey sample numbers are small [12] and non-sampling errors large the estimates should be treated with caution.

## **No respondent reported a profit for 1998/99**

The average farm surveyed had 279 breeding hens [but very few of these hens were breeding in 1998-1999] running on 208 hectares of grazing land and 1.5 hectares of sheds and buildings. All enterprises were fully integrated operations involving breeding, incubation and growing activities. Production systems involved typically intensive feeding with some grazing through pastures. The product focus was firmly on oil. All businesses were fully owned by the managers and there was little evidence of contract growing.

## **Some businesses are generating trading profits, but most consider themselves economically unsustainable**

None of the respondents reported a profit in the year ended June 1999 and this reflects low product prices received and lack of turnover because of collapsed markets. The average price received for emu oil was \$26.38/litre; for skins \$62.50/skin; for meat \$11.00/kg; for eggs \$4.75; and for live emus \$28.00/bird. But some businesses are generating trading profits, a basic pre-condition for net profit. Most operators consider their emu enterprises to be either economically unsustainable or to be a matter of some concern.

## **Product prices were adversely affected by the Asian crisis**

Product prices received and turnover reflect, in part, industry conditions which, in turn, were adversely affected by the Asian economic crisis in 1998-99. But the Asian economic crisis should not be used to deflect attention from serious management deficiencies in the areas of feeding, breeding, marketing and capacity to make changes. The production of emus is just as demanding as other relatively intensive farm enterprises where operators have had to achieve significant expertise in feeding and breeding management as well as structural adjustment in response to changing economic conditions.

## **Global competition is forcing producers to improve competitiveness**

In response to the economic difficulties facing the emu industry most producers have put their enterprises on hold, waiting for the traditional recovery in product and animal prices received. Unfortunately, this strategy, which was a feature of Australian broad acre agriculture in the 1980s and 1990s, is potentially very high risk. With global competition there is now more and more pressure to constantly improve productivity in a regular and systematic way. Assets have to be worked intensively if productive capacity is to be retained and profitability restored when market access is achieved and demand for new products increases.

Emu producers face three choices when prices and markets contract:

1. Exit the industry and allocate labour and resources to an alternative enterprise; or
2. Put the enterprise 'on-hold', closing down breeding and intensive feeding; or
3. Adjust work practices, processes and structure, intensify marketing and improve productivity to make the enterprise viable.

Very few producers have selected the third option. While it is tempting to put an emu breeding activity on hold it is not possible to do that with the marketing of emu products. New products are required for new markets and there is no way of placing the marketing function on hold.

**A producer needs to generate revenue of at least \$50/hour to meet essential expenses**

Labour productivity and growth in productivity are the most critical variables in Australian agriculture and it is an area of significant variation among emu enterprises. The average farm allocated some 1500 hours/year to their emu production enterprise through two people working part-time. Basic economics suggest a business need to generate revenue of at least \$50/hour of labour input to be able meet the essential costs of labour expenses, feed and capital. If this cannot be achieved, the business must change work practices, structurally adjust or allocate its resources to a more profitable enterprise.

**Profitable operators allocate more than 5% of expenditure to marketing**

While most operators allocate between 1% and 5% of financial and labour resources to marketing, the most profitable operators allocate over 5%. The weakest features of marketing was the lack of regularity in customer contact [often not much more than once/year] and lack of overseas travel to obtain information about emu markets. Marketing weakness is revealed in a significant range in product prices received for skins [range from \$45 to \$80] and oil [ range from \$10 to \$50/litre]. Processors suggest that some 90% of skins are damaged. The strongest feature of marketing was the readiness of producers to provide a guarantee of performance for animals and products sold.

**Producers are lacking leadership in innovating**

Emu producers generally did not reveal a great capacity to innovate and make changes in response to adverse conditions. The average producer achieved a score of 50% in their approach to innovation and structural change and this is a serious weakness in an industry where new market and new product development demands are high and economic conditions are volatile. Producers are lacking leadership in the introduction of change and new technologies into their operation. The most profitable operators actively sought leadership in the employment of fast release strategies to speed up the development and release of new technologies, work practices and support services for customers.

**Minimum size operation is probably 50 breeders**

The economic challenge for producers is to get to a minimum sized economic operation of at least 50 active breeders and to achieve production benchmarks of:

- 98% egg fertility
- 95% survival rates
- 0-1% death rates
- 35 eggs per laying hen
- emu oil price \$25/litre
- feed costs of less than \$200/tonne

In addition, producers require meticulous management practices to optimise feed and labour productivity. Other contributing factors to profitability include access to efficient, low damage and low cost abattoir facilities, an effective animal health program, regular training of staff and at least one overseas study visit to at least one key market.

**Improved information management will improve work practices.**

To achieve the improved work practices, processes and performance suggested above most producers need to substantially improve their data collection, storage and retrieval facilities. Most producers lack basic knowledge of their own feeding and breeding practices, labour use and enterprise profitability. The introduction of the GST will no doubt improve data collection facilities and practices and that will provide an opportunity for producers to simultaneously improve the data needed for sound farm management practices

The study recommends producers be encouraged to continue to participate in this benchmarking study and a new survey which will be distributed later in the year 2000 to those who participated in this study. The new survey will be integrated into a complete single survey for all new animal product industries. Growth in productivity over time is a critical factor in restoring profitability and continued participation in the benchmarking study is likely to facilitate progress in this area. In addition, it is recommended that there be a training workshop/seminar on the benchmarking study results and the provision of further training in farm management decision making methods. For example, partial and capital budgeting and breeding and feeding management practices. The ultimate aim of the study is to improve skills in the management of emu enterprises and the benchmarking study simply provides material to help achieve that aim.

As an aid to the interpretation of benchmarking results and decision making we attach the following framework which sets out the linkages between profitability, costs and technical and marketing processes as well as sustainability. Respondents may work their way progressively through the framework, recognising that this is a simplified diagram, not a tool that should be used decisively because individual situations vary significantly. In most cases a business plan should be prepared to respond to specific issues or to prepare a response to gaps in performance.

## Simplified decision framework

# 1. Introduction

The survey of emu production enterprises in Australia was designed to give producers some insights into the processes work practices and outcomes and operating environment of the industry. The results should be interpreted with more than the normal level of caution as the sampling numbers are small and therefore the sampling error is large and non-sampling errors were widespread, reflecting the generally undeveloped data collection and business planning systems that exist in the industry. Nevertheless, several businesses do have well developed information systems and these firms are well placed to engage in an effective business planning system to improve productivity and profitability.

The estimated number of farmed emus in Australia was 50,000 in 1999.<sup>1</sup> Respondents [12] to the survey account for around 20% of stock numbers. Stock numbers have declined significantly since the mid 1990s when numbers exceeded 850,000.

The distinguishing feature of the emu industry is that it involves the development of new products for new and volatile markets, exposing operators to relatively high risk and placing quite severe demands on their skills and expertise in marketing, entrepreneurship, technical knowledge and financial control.

The survey covered six basic management functions:

1. Customer management
2. Innovation and capacity to change
3. Production operations management
4. Financial management
5. Social situation
6. Environment and sustainability of enterprise

Responses were most effective for functions 1,2,5 and 6. Responses for production operations were generally incomplete and for this reason not all specific question responses are reported as disclosure may have breached confidentiality.

The report provides an indicative industry benchmark for the six areas of interest and an indication of the relative performance of individual respondents. Annex 1 contains the survey and Annex 2 describes how performance was measured. Annex 3 shows the average and top responses for each question.

Profitability is not a common factor between the participants of Australia's emu industry. Low prices and lack of overall demand is commonly cited by survey respondents as the main factor behind their inability to turn a profit. Despite these conditions, there are potentially profitable participants in the market<sup>2</sup> and they are defined through their constant attention to marketing, innovation, productivity and information management. These participants are also achieving above average results in production parameters such as fertility, survival and death rates and egg productivity of their hens.

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<sup>1</sup> McKinna,D. 1999 'Marketing of New Animal Products', RIRDC Publication No. 99/53, p 8

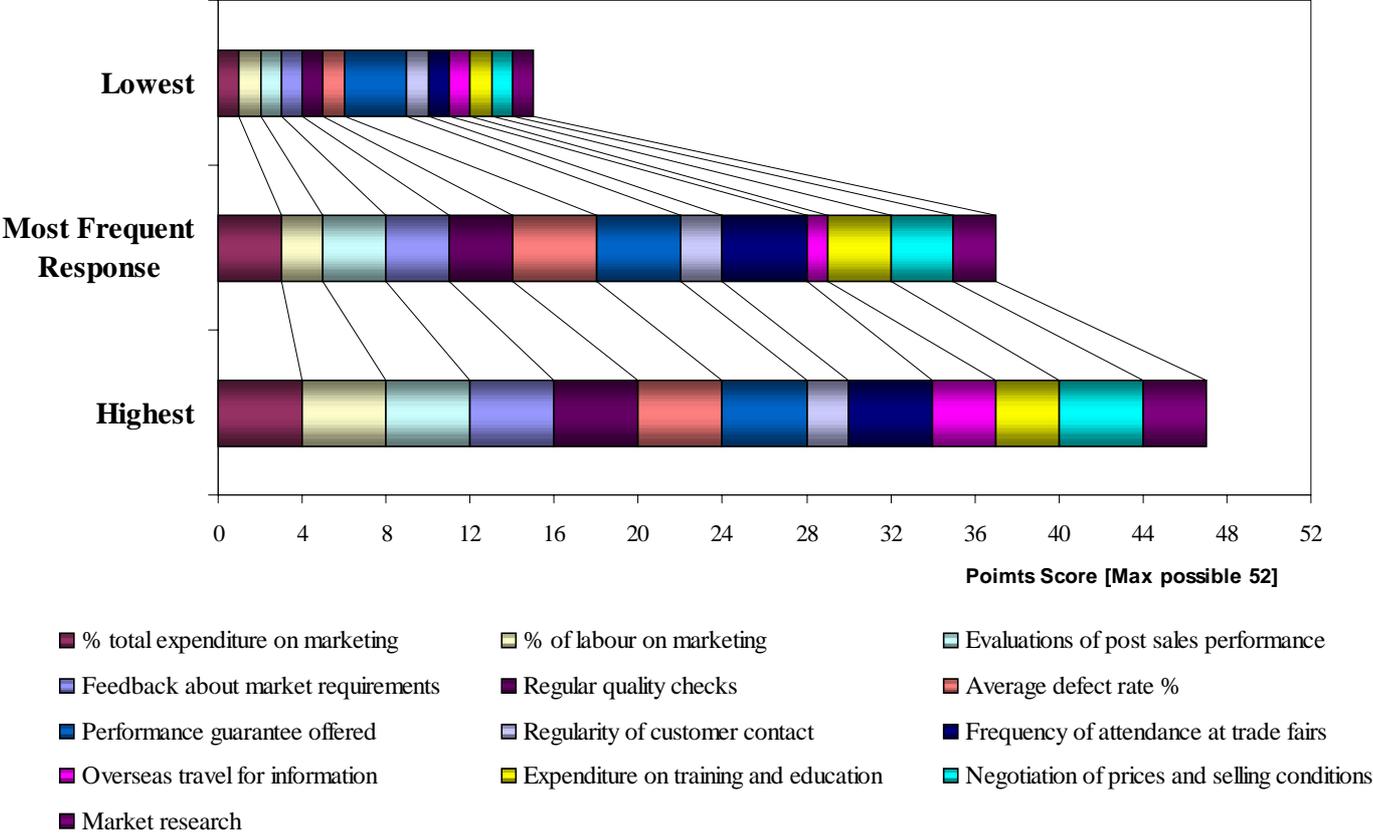
<sup>2</sup> Defined by their ability to turn a trading profit, a precursor to net profit

# 2. Marketing Management

The survey responses reveal a strong positive association between profitability and customer management and innovation. Operators with higher trading profits spent a greater proportion of time and expenditure on marketing and sales, particularly post-sales support.

The average aggregated customer management score for operators was about 64% out of a maximum possible of 100%. The scores were based on a series of multiple choice questions about various customer management issues faced by farmers<sup>3</sup>. The major marketing strength of the industry is the low average defect rate of less than 1% and the willingness of operators to provide a performance guarantee. The level of sales support was lower, however, with almost half of all producers contacting their customers once or less per year. Only 20% of producers regularly monitored post-sales performance and customer satisfaction. There are significant gaps between the highest and lowest responses for almost all marketing responses. [Chart 1]

**Chart 1 : Marketing**



<sup>3</sup> See Measurement Method Notes (page 36) for more detailed description of assessment method.

The main weakness of the enterprises is their lack of expenditure and labour on marketing. Most operators allocated 1-5% of total expenditure and 1-5% of total labour hours used on emus to marketing, while profitable farmers spent over 10%. The lack of resources in this area is likely to have contributed to doubts about the sustainability of most enterprises, through their inability to influence buying behaviour, market access and prices received. While attendance at trade fairs was very frequent, very few producers engaged in overseas travel. Given the apparent reliance of the industry on international markets, this may also contribute to the low prices and poor demand experienced by producers.

### 3. Innovation

The level of trading profits was also associated with innovation and adjustment capacity of the emu operator. The average aggregated innovation score was around 49% compared to above 60% for most profitable or sustainable operators. Profitable operators were regularly introducing change to their operation, particularly in the area of improving or introducing new and improved strains of livestock and products. These operators actively seek leadership of technological advances such as fast release of new products and new livestock strains and they consistently make use of suppliers, customers and research to achieve this. In addition, they allocate time and money to training to improve their capacity to innovate and make structural change.

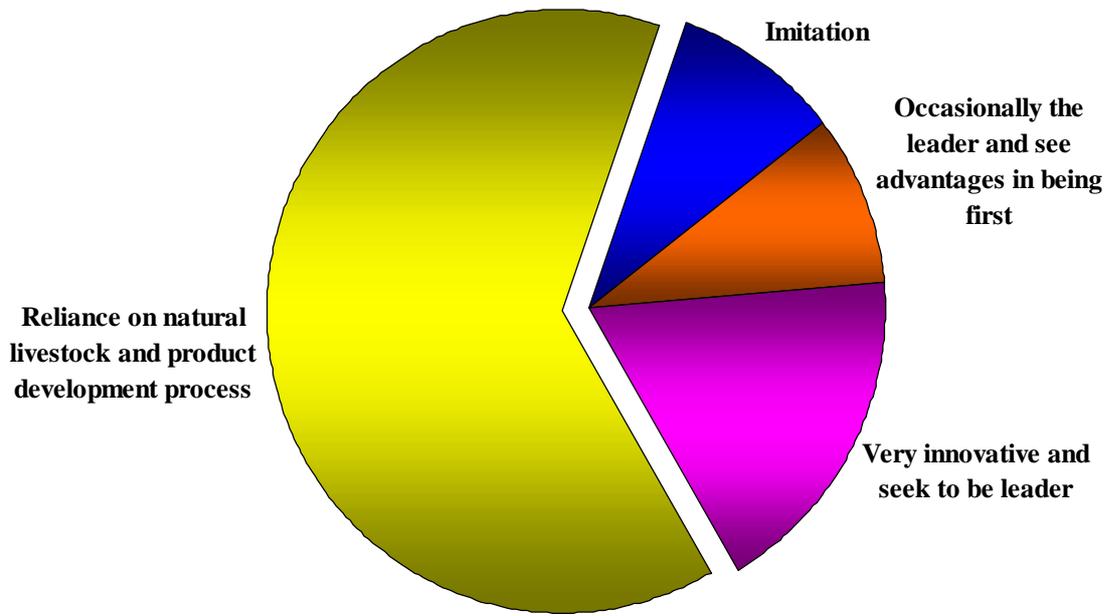
Most emu producers could improve significantly their capacity and willingness to change work practices, the structure of their businesses and their business models. Too many producers appear to be reliant on a business model based simply on expectations of a return to relatively high prices for live birds. That model, like the fast disappearing Internet models for high tech companies based on 'blue sky' prospects, is unlikely to produce the much-needed return to profitability and viability. The business model with most chance of success is likely to involve more attention to basic disciplines in marketing, feeding and breeding management, financial control and general management to ensure, in particular, that labour productivity is constantly improving. All of this would incorporate ideally a greater preparedness to change and introduce new work practices and new structures to suit volatile economic conditions. It is not that the emu industry lacks opportunities for innovation. Being such an undeveloped industry there are many untested feeding and breeding methods. And the products, meat and oil in particular, fit within the scope of the fastest growing markets in agriculture, namely functional and natural foods and cosmeceuticals.

In regard to a question about 'fast release strategies to speed up the development and release of new livestock strains, new products and new support services for customers' most respondents felt there is a natural livestock and product development process and it was more important to get it right than have it available early [Chart 2]. But some of the more profitable producers saw themselves as leaders in innovation and sought to be the first to try a new technique.

More generally, emu producers lack leadership in:

- Introducing new change projects
- Introducing new or improved labour techniques or machine technologies
- Employment of fast release strategies to speed up the development and release of

**Chart 2 : Focus of Innovation Amongst Emu Producers**  
[% of respondents that approach innovation in this way]



new technologies, work practices and support services.

- Using suppliers of livestock, research scientists and clients to design and get new ideas for new technologies and processing

Table 1 is a self diagnostic tool for measuring innovation and respondents are invited to complete the form, assess their position and then, most importantly, draw up an innovation plan for implementation in the coming year.

## 4. Production Operations Management

Most respondents run an owner-managed and fully integrated incubation, breeding and growing enterprise. We are aware, however, that some significant contract operations exist in the industry with one farm reported to have over 30,000 birds running under contract. The average farm size surveyed had 208 hectares allocated to emu grazing and the average number of breeding hens was 279. But most breeders in 1998-99 were not being used for breeding as a measure to contain costs and as a response to the lack of market access.

Profitability was linked to technical performances with respect to death, fertility and survival rates. Operators with higher trading profits achieved 98% egg fertility, over 95% survival rates [12 months from hatching] and 0-1% death rates. Some breeding performance indicators can be seen in the following Chart 3.

Table 1  
**PRODUCT AND SERVICE INNOVATION**  
 A Self Diagnostic Sampling Tool

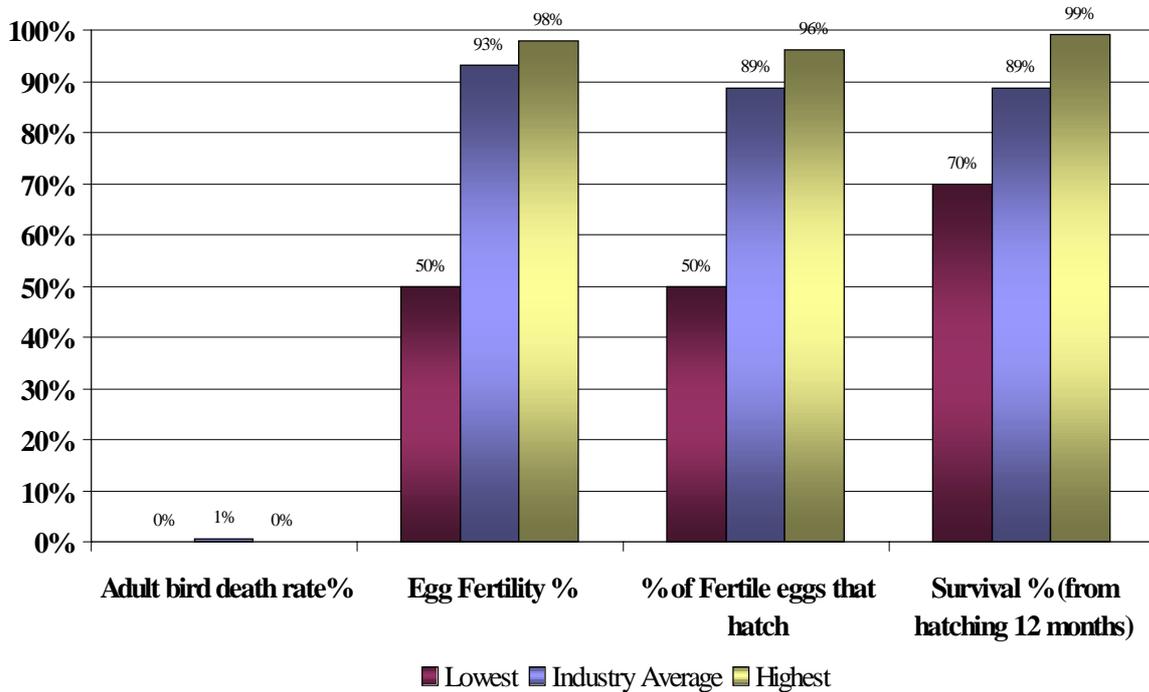
Management Variable	To what extent does your business or organisation :	Rate yourself from :								
		Low	Average							High
<b>1. Strategy</b>	Have a stated and workable strategy for livestock, product or service innovation ?	1	2	3	4	5	6	7	8	9
	Have an objective to be innovative in the development of improved livestock, products or services and an evaluation system to measure performance in meeting the objective ?	1	2	3	4	5	6	7	8	9
<b>2. Structure</b>	Make use of joint ventures, business networks, partnerships or strategic alliances to develop new markets and new livestock, products or services ?	1	2	3	4	5	6	7	8	9
	Require customers, suppliers and functional experts in sales and marketing to be involved in the development of new livestock, products or services ?	1	2	3	4	5	6	7	8	9
<b>3. Systems</b>	Have effective and real access to livestock, product or service distribution channels in foreign markets ?	1	2	3	4	5	6	7	8	9
	Reward creativity in the development of livestock, products or services?	1	2	3	4	5	6	7	8	9
<b>4. Marketing Approach</b>	Have a management information system that monitors the innovation practices of your own business and your competitors ?	1	2	3	4	5	6	7	8	9
	Evaluate the post-sale performance of livestock, products or services ?	1	2	3	4	5	6	7	8	9
<b>5. Management Style</b>	Employ speed strategies to enhance the release of new strains of livestock, products or services?	1	2	3	4	5	6	7	8	9
	Continuously create new strains of livestock, products or services ?	1	2	3	4	5	6	7	8	9
	Use special methods to reward innovative behaviour by employees ?	1	2	3	4	5	6	7	8	9
<b>6. Personnel Management</b>	Accept mistakes by employees when they are developing new strains of livestock, products or services?	1	2	3	4	5	6	7	8	9
	Place a high value on change and make it part of your organisational culture ?	1	2	3	4	5	6	7	8	9
	Employ creativity techniques (e.g. brainstorming) for livestock, product and service development ?	1	2	3	4	5	6	7	8	9
	Provide physical facilities that are conducive to the exchange of ideas and creative thinking ?	1	2	3	4	5	6	7	8	9

**My Total score.....**  
 What about your local competitors score?.....  
 What about foreign competitors?.....  
**Post evaluation response : How will you respond to this assessment when will you respond ? How will be :**

*The highest score possible is 160 points. The lowest is 16 points.  
 Scores above 130 indicate a very innovative organisation. Scores from 115 to 130 are good and probably internationally competitive. Scores between 95 and 115 would suggest an acceptable level of innovation for a domestic market. Scores between 65 and 95 would suggest room for improvement. Scores below 65 indicate there is not much innovative activity here. Scores below 30 would indicate a firm that is not seriously involved in the development of new and improved markets and breeds of livestock, products or services.*

An adaptation from IQ I, by Higgins J., professor of management  
 Cameron Graduate School of Business, University of Florida

**Chart 3 : Technical Processing Parameters: 1998/99**



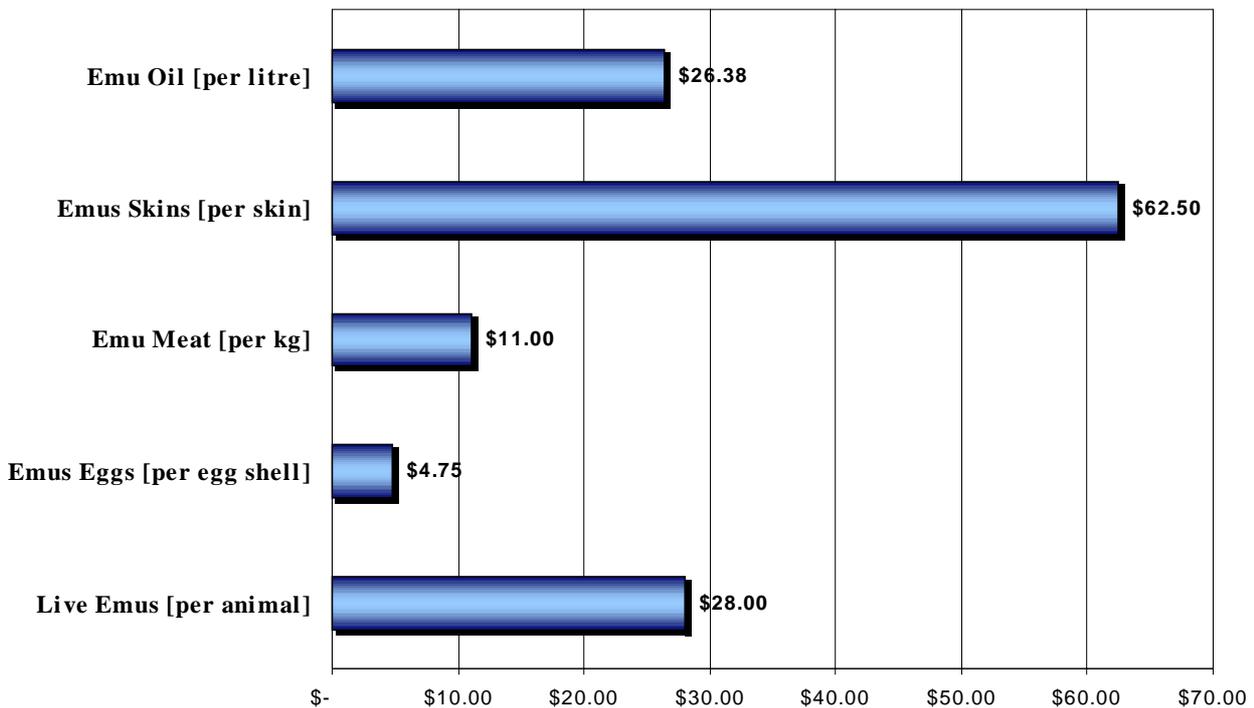
More than 50% of enterprises focus on producing emu for multiple products, while the remainder focussed only on emu oil. High slaughter and transport costs and the potential for losses during transport have induced producers to slaughter stock on farms, often discarding the meat and skin. Where farms were profitable, product focus appear to be oil and eggs as meat and live emus were generally not profit generators.

There is significant variation between respondents in virtually all of the production system characteristics as shown in detail in Section 3 of Annex 3. This ranges from product prices received through to breeding and feeding practices. For instance, oil prices received by the top operators were three times higher than that of the bottom. Skin prices received by the top operators are 100% more than the lowest. Average product prices received are shown in Chart 4. In regard to the product prices for skins we are unable to report on the unit price per square metre because of problems in the interpretation of data from skins that had a large proportion of defects.

According to processors around 90% of emu skins are damaged, resulting in significant price discounts. Skin prices received ranged from \$45 to \$80/skin, with an average of \$62.50.

The number of eggs laid/bird was seven times higher for the top operators compared to the bottom operators. Interpretation of the feeding data was difficult because of the variability in grazing and intensification between operators. For instance, the effect of low grain input prices and lower feeding levels on profitability and productivity was unclear because of significant differences in the availability and quality of grazing conditions.

**Chart 4: Average Emu Product Prices Received (\$)**



The average number of hours allocated to the emu enterprise is 1503/year for an enterprise running 279 breeding hens, most of which were not breeding in the survey year. The average number of cocks/breeding female was 0.51 though most operators had almost 1 cock for each breeding female. Profitability is effected by the skills, work practices and labour hours of the operators. Every labour unit in Australia has to generate at least \$50/hour to pay for labour expenses, feed, overheads and marketing and provide some modest return to the capital employed. Otherwise, its probably better employed in another enterprise that can generate an acceptable return. But before making a decision to exit an industry it is best to evaluate the returns that could be achieved through making changes to work practices, feeding methods, breeding, marketing and business structures. Many operators are unable to estimate the unit cost of their labour and time allocated to emu activities. Few owner operators accept that their own labour is a scarce resource and has a significant opportunity, if not cash, cost to it.

Feeding of emus for optimal production is a complex issue in terms of the joint products produced and potential for feed to affect product quality, oil in particular. Clearly, oil is the main product and therefore feeding practices need to optimise production of high quality fat. Average feed costs are shown in Chart 5, but there are significant differences in feeding costs/bird. [refer to Annex 3, Table 3.4]. For instance, the all bird average cost of feed used by different producers ranged from \$90 to \$250 per tonne<sup>4</sup>. The feed intake of growers ranged from 0.9 to 2.0kg/day for different producers. The overall feed intake averaged 0.65 kg/day.

<sup>4</sup> Please note that as several survey recipients did not give complete information on feed costs per bird type the overall average does not sit within the bird type range.

**Chart 5: Average Feed Costs**

<b>Average feed costs 2000</b>	<b>Feed costs per tonne (\$)</b>	<b>Kilos feed per day</b>	<b>Average feed costs per day (\$)</b>	<b>Average feed costs per period (\$)</b>
Chicks 0-2 months	370.00	0.14	0.05	3.05
Chicks 2-4 months	312.50	0.26	0.08	4.92
Chicks 4-6 months	220.00	0.61	0.13	7.99
Grower 6-10 months	195.00	0.88	0.17	20.59
Grower 10-12 months	195.00	1.10	0.21	12.90
Breeder	190.00	0.94	0.18	65.19
All Bird Average	247.08	0.65	0.14	NA

Processors indicated the average emu liveweight is 42.5 kg, with a hot-dressed weight of 18 kg and 11.0 kg cold finished weight. Responses from producers suggest the information about weights for the various products is not readily known by them.

Animal health practices and facilities for security of livestock health are a feature of some operations but this is an area for further improvement in others. The top operator has a comprehensive bio-security programme in place and facilities for regular cleaning, disinfection and isolation of animals. In addition, facilities are in place at the top enterprises for regular weighing of birds, but most operators did not have this facility. This is a serious shortcoming for an intensively run enterprise. Unless weights are monitored it is very difficult to optimise feeding, growth and productivity. All of these problems are reflected in low labour productivity and profitability.

The average distance to abattoir from the typical farm is 214 km with outward freight costs to the abattoir ranging from \$10 to \$40/bird. These costs, coupled with slaughter costs at some abattoirs as high as \$90-\$100, can render the recovery of meat totally unviable. In response to this situation some operators are slaughtering the stock on farm and discarding the meat, leaving only the oil and skin for sale.

It is clear that there is a need for more competition among processors, particularly in Western Australia where slaughtering fees are, or were at the time of the survey, some 50% higher than in the Eastern States. But competition in the processing of emus and ostriches is difficult to generate because of economies of scale and the small size of the industry. One option to examine further is the potential for a mobile abattoir with an export permit to deliver a service to producers in more remote regions.

## **5. Financial**

Most farmers had serious concerns about the long-term sustainability of their economic and financial positions, mainly due to marketing problems and a basic failure of enterprises to generate enough cash to meet labour and feed costs. Nearly all producers face a serious constraint in their payment conditions with few operators being paid until the processed product is sold. Even then there is the risk of non-payment. This lingering credit problem appears to have been difficult to solve. In other industries trust accounts appear to have been successful in protecting producer ownership of revenue where there is delayed settlement and there is no apparent reason this system could not work with the emu industry. Alternatively, some producers have elected to vertically integrate their operations, sometimes opening their own retail stores. This eliminates cash settlement risk, though new risks are encountered in dealing with and developing end markets.

## **6. Social and Environmental Situation**

To further understand the social conditions of producers we examined also their living environments. The average producer lives about 47 km from the nearest leisure facilities such as cinema, shopping centres etc. and about 40 km from the nearest hospital.

The average number of holidays taken by employees is about 21 days/year and for managers it is about 11 days.

The average operator has about 4 days of training each year though several operators have no training programmes at all.

## 7. Conclusion

Although the emu industry has experienced one of the most severe downturns of any agricultural industry there is some evidence from this study that a number of enterprises could recover if they could implement expert management practices across the board to achieve a significant improvement in labour productivity. The strategy of placing enterprises on hold has high hidden risks to it and is unlikely to work and most likely to merely delay the time of exit. Although it is relatively easy to put breeding on hold, the processes of marketing, gaining access and developing markets, product development and innovation in structural change and work practices require continued attention and are much more difficult to put on hold.

The economic challenge for producers is to get to an optimal sized economic operation which could have at least 50 active breeders though increased size is much less important than improved work practices; egg fertility of 98% or more [up from the average of 87%]; hatchability of 95% [up from the average of 82%]; over 35 eggs/laying hen [up from the average of 23]; a survival rate of 95% [up from the average of 89%]; an emu oil price of at least \$30/litre; average feed costs of less than \$200/tonne and meticulous management practices to optimise productivity from feed at all ages; a major allocation of resources to marketing [at least 10% of total expenditure and labour hours available]; and a preparedness to innovate and change structures and work practices at least 10 times each year.

Producers also need nearby or on-farm access [average distance is 214 km] to efficient, low damage and low cost abattoir facilities for processing [slaughter costs of less than \$60/head] and to put in place an effective animal health programme. Regular training of staff and at least one overseas study visit to at least one key market is likely to feature in the annual plan.

Access to efficient and internationally competitive abattoir facilities is a serious problem for the industry.

# 8. Appendices

## Appendix 1: QUESTIONNAIRE

The following pages contain the main pages of the questionnaire that was either mailed or delivered to producers.

Section 1 – Customer Management [for each question tick one box that best describes your situation]

1. What % of total expenditure on your emu enterprise is allocated to marketing expenses [i.e. advertising, promotion, selling, broker selling commissions]?

1	2	3	4
Less than 1%	From 1 to 5%	From 5-10%	More than 10%

2. What proportion of total labour hours used in your emu enterprise is allocated to marketing/sales of animals and products?

1	2	3	4
Less than 1%	From 1 to 5%	From 5-10%	More than 10%

3. Do you evaluate post-sale performance or measure your customers' satisfaction with your live animals, products, delivery and support service?

1	2	3	4
Never	We did on one occasion.	Occasionally	Always, every sale is monitored.

4. What level of feedback and communication do you receive about market requirements and the performance of your emu animals and products when sold ? 1 2

3	4		
None	A little. But it could be better	Just enough to make decisions	Comprehensive, we are part of a supply chain where we receive full reports on performance

5. Do you conduct regular checks of quality?

1	2	3	4
Never	We did on one occasion	Occasionally, but not always	Always, we comply with a formal quality assurance programme.

6. What is the average animal or Emu product return rate or defect % on your deliveries? That is, what % of products or animals [ include damaged or bruised parts] are either returned to you or classed as defective by your customers?

1	2	3	4
Less than 1%	From 1 to 5%	From 5-10%	More than 10%

7. Do you guarantee the performance of your animals or products when sold?

1	2	3	4
Never	We did on one occasion	Occasionally, but not always	Always.

8. On average, how many times do you or your staff contact customers each month to check their requirements; find out what's happening in the market; and build relationships to help sales.

1	2	3	4
Not often, maybe once each year when we are ready to sell	Each customer is contacted each month	Each customer is contacted each week	We are in constant, almost daily, contact with our customers

9. How often does you or your staff attend emu trade fairs, industry meetings and conventions?

1	2	3	4
Never	Once each year	2-5 times/year	More than 5 times/year.

10. Does you or your staff travel overseas or to foreign countries to obtain information about emu markets and find out what other suppliers are doing?

1	2	3	4
Never	We did on one occasion	Occasionally, once every 5 years	Often, at least once/year.

11. Do you spend money or allocate time to training and education to improve marketing and selling skills?

1	2	3	4
Never	We did on one occasion	Occasionally, but not always	Always, it is a regular part of our business activities.

12. How do you negotiate prices and selling conditions for me animals and products sold?

1	2	3	4
Don't really negotiate, we accept the buyer's first offer as his best offer.	Sometimes, we ask for a better price or better payment conditions.	We usually engage in an exchange of views about prices and delivery conditions	We always engage in an exchange of views about prices and delivery conditions that are acceptable for both the buyer and us and encourage the buyer to come back next year

13. How much market research do you do?

1	2	3	4
Very little really, we just produce the emu & leave the marketing to the buyer	We usually get some price information when we have some animals or product to sell.	We do carry out market research quite regularly to find out what prices are being paid for different animals and products.	We have a very systematic approach to market research. It is an integral part of our operations, marketing and business planning.

**Section 2 – Innovation and Capacity to Change [ for each question tick the one box that best describes your situation]**

Definition: A “*Change Project*” is any planned programme or set of activities you have designed to alter fundamentally the way you do business. For instance, organizational changes to your legal structure; or a change from selling Emus for use as livestock to one of selling Emus for products such as meat and leather; or a change in quality; or a change in the skills required for emu production.

1. How many ‘change projects have you introduced in the last 12 months?

1	2	3	4
Zero	1-5	5-10	More than 10

2. What is the main focus of the Change Projects?

1	2	3	4
More emphasis on emu products such as oil and leather than supplying livestock.	More emphasis on customer service	Improving the skills of employees and our own management	Improved information systems
5	6		
More precise feeding and nutritional management systems	Other		

3. Has the number of Change Projects increased other the last 12 months?

1	2	3	4
Nil, no change, or decrease	Up to 20% increase	Up to 50% increase	50% or more increase

4. What are the main reasons for introducing or not introducing the Change Projects?

1	2	3	4
It is up to the government to change the industry or the markets to change, we have got enough to do producing the emus.	Customer pressures and general market requirements.	Low prices and production costs of competitors.	Other matters ... e.g. rearrangement of the our general structure and strategic planning

5. How many new or improved strains of emu livestock or new emu products have you introduced over the past year for your customers?

1	2	3	4
Zero	1-2	3-5	More than 5

6. Which process is changed most often in your emu business?

1	2	3	4
Feeding and nutrition practices.	Labour management	Breeding and survival management	Other.

7. Do you employ fast release strategies to speed up the development and release of new strains of livestock [e.g. artificial insemination, embryo transplant], new products and new support services for customers?

1	2	3	4
No, there is a natural livestock and product development process and it is more important to get it right than have it available early.	To some extent but we are generally satisfied with imitating the innovators than trying to be first to do something	Sometimes we are the leader and see advantages in being the first to try a new technique	We are very innovative in this area and seek to be a leader in development of new livestock and emu products

8. Do you make use of suppliers of feed, research scientists and customers to design and get ideas for new strains of emu livestock, new emu products and new support services?

1	2	3	4
No	Sometimes	Usually	Always

9. Do you spend money or allocate time to training and education to improve your capacity to change or introduce new livestock strains or new emu products?

1	2	3	4
Never	We did on one occasion	Occasionally, but not always	Always, it is a regular part of our business activities.

10. To what extent do you introduce new information and communication technology?

1	2	3	4
We don't have a computer and are not connected to the Internet.	We have a computer but are not connected to the Internet	We have a computer that is at least 2 years old and are connected to the Internet	We have a computer that is less than 2 years old and are connected to the Internet

### Section 3: Production operations management

This section of the survey covers revenue activities and production costs. For administrative ease and simplicity the survey doesn't cover every single cost and activity item. Instead, it is focussed on 5 key cost items and activities identified from research elsewhere: Feed/Nutrition; Veterinary; Labour; Replacement Purchases; and Freight.

#### 3.1 Production System

**3.1.1 Feeding:** The production system we use is best described as:

1	2	3
Intensive with full feed supplementation	Mainly intensive but with some pastures	Mainly extensive grazing with some supplementation of concentrates

**3.1.2 Enterprise Structure:** The enterprise structure is described as :

1	2	3
Mainly the incubation of eggs	Mainly growing of chicks purchased from elsewhere	Fully integrated incubation, breeding and growing enterprise

**3.1.3 Product Focus:** The main focus is on:

1	2	3	4
Emus for meat	Emu skins for leather	Producing live animals for other producers	Emus for oil

**3.1.4 Management Structure :** Our management is:

1	2	3	4
We own and manage all the emus on our own land	We own the emus only and they are managed by an independent management company.	We are an emu management company and investors own most of the emus	Other

#### 3.1.5 Effective Land Area Used

Area of effective grazing land used by the emu enterprise [hectares]

Area of land used by sheds and other buildings for intensive production [hectares]

### 3.2 Trading Profit [\$A or nominate local currency .....

[Note: Survey annex contains schedules to help estimate your trading profit. You may wish to ask your accountant to complete these forms. For convenience we include in the Annex trading profit schedules for livestock, eggs, meat, skins and oil.]

		<b>Trading Profit</b>
Live Emus	<b>A</b>	<input type="text"/>
Emu Eggs	<b>B</b>	<input type="text"/>
Emu Meat	<b>C</b>	<input type="text"/>
Emu Skins	<b>D</b>	<input type="text"/>
Emu Oil	<b>E</b>	<input type="text"/>
<b>TOTAL EMU TRADING PROFIT</b> =A+B+C+D+E		<input type="text"/>

#### 3.2.1 Average Product Prices Received

Live Emus [per animal]	<b>A</b>	<input type="text"/>
Emu Eggs [per egg]	<b>B</b>	<input type="text"/>
Emu Meat [per kg]	<b>C</b>	<input type="text"/>
Emu Skins [per skin]	<b>D</b>	<input type="text"/>
Emu Oil [per litre]	<b>E</b>	<input type="text"/>

### 3.2.2 Emu Stock Replacement Purchases

	<b>Numbered Purchased</b>	<b>Unit Cost</b>
3.2.2.1 Eggs	<input type="text"/>	<input type="text"/>
3.2.2.1 Replacement Breeding Hens	<input type="text"/>	<input type="text"/>
3.2.2.2 Cocks	<input type="text"/>	<input type="text"/>
3.2.2.3 Chicks [0-6 months]	<input type="text"/>	<input type="text"/>
3.2.2.4 Replacement Growers [6+months]	<input type="text"/>	<input type="text"/>

#### 3.2.2 (a) Total Replacement Purchases for Year

<b>Number</b>	<b>Total Value</b>
<input type="text"/>	<input type="text"/>

### 3.3 Technical Production Parameters

Number of Eggs Incubated	<input type="text"/>
Typical Incubation Temperature [ Degrees Centigrade]	<input type="text"/>
Typical Relative Humidity of Incubator [%]	<input type="text"/>
Egg Fertility %	<input type="text"/>
Percentage of Fertile Eggs that Hatch %	<input type="text"/>
Number of Breeding Hens	<input type="text"/>
Number of Eggs Laid per Hen	<input type="text"/>
Adult Bird Death Rate %	<input type="text"/>
Survival % [ from hatching to 12 months]	<input type="text"/>
Slaughter Age [ largest % of animals slaughtered]	<input type="text"/>
Average Conversion Ratio [ Kg of feed: Kg Live wt gained ]	<input type="text"/>

**3.4 Feed and Nutrition**

	Feed Cost/Mt	Kg Feed/day
Chicks [0-2 months]	<input type="text"/>	<input type="text"/>
Chicks [2-4 months]	<input type="text"/>	<input type="text"/>
Chicks [4-6 months]	<input type="text"/>	<input type="text"/>
Growers [6-10 months]	<input type="text"/>	<input type="text"/>
Growers [10-12 months]	<input type="text"/>	<input type="text"/>
Breeders	<input type="text"/>	<input type="text"/>
All Bird Average	<input type="text"/>	<input type="text"/>

**TOTAL FEED COSTS**  
[\$A or local currency]

### 3.5 Veterinary & Health

#### 3.5.1 Costs

	Birds Treated	Cost/Bird
Fees	<input type="text"/>	<input type="text"/>
Medication	<input type="text"/>	<input type="text"/>

#### 3.5.2 Practices

(a). Do you have a formal emu animal health security programme to prevent the introduction of diseases to the farm through - for instance - feeds, vehicles, equipment, people, birds etc.?

1	2	3	4
<input type="text" value="No"/>	<input type="text" value="We carry out an inspection every now &amp; then."/>	<input type="text" value="We check most things that could introduce a disease but not everything."/>	<input type="text" value="We have a systematic bio security programme that controls the entry of potential disease carriers, monitors stock health &amp; enables early detection of a disease."/>

(b.) Do you monitor growth of animals and, for those with incubation enterprises, weight loss of eggs through to hatching?

1	2	3	4
<input type="text" value="No"/>	<input type="text" value="We carry out an inspection every now &amp; then."/>	<input type="text" value="We check weights fairly regularly but not every day."/>	<input type="text" value="We have a systematic weighing and monitoring programme that allows early detection of any departures from normal growth."/>

#### 4.4.3 Facilities

Do you have buildings, infrastructure layout and equipment to enable regular disinfection; isolation of diseased animals; and ease of use by veterinary experts?

1	2	3
<input type="text" value="Limited facilities"/>	<input type="text" value="We disinfect buildings, floors, equipment etc. but we don't have a facility to fully isolate stock or for dedicated use of veterinarians"/>	<input type="text" value="Yes, we have all these facilities."/>

**3.6 Labour** [ You may wish to refer first to Annex 4 to help answer this question]

**3.6.1 Labour Employed**

Number of People Working on Emus

Total Hours on Emus for Year

**3.6.2 Labour Productivity**

	Number managed/person	Months worked/person/year
Egg Incubation	<input type="text"/>	<input type="text"/>
Breeding Birds	<input type="text"/>	<input type="text"/>
Growers	<input type="text"/>	<input type="text"/>
Chicks	<input type="text"/>	<input type="text"/>

**3.6.3 Labour Unit Costs**

	Annualised Unit Cost	Months worked/year
Manager/Supervisor	<input type="text"/>	<input type="text"/>
Casual farmhands	<input type="text"/>	<input type="text"/>
On-costs % of annualised unit cost for superannuation, holidays etc.		<input type="text"/>

**3.6.4 Labour costs for the year**  
[\$A or local currency]

### 3.7. Emu Freight and Cartage

3.7.1 Distance [km] to nearest abattoir –slaughter house

3.7.2 Total outward freight and cartage costs [\$A or local currency]

3.7.3 Total inward freight and cartage costs [\$A or local currency]

### 3.8 Emu Overhead Costs

3.8.1 Power

3.8.2 Fertilizer

4.8.3 Water

3.8.3 Repairs & Maintenance

3.8.4 Pasture maintenance

3.8.5 Other, incl. Administration, insurance, fuel etc

**TOTAL OVERHEAD COSTS**

## Section 4: Financial Structure & Financing

### 4.1 Payment Conditions

On average we receive payment for stock:

1

Typically, payment is delayed until the animals have been slaughtered and product sold.

2

Typically, payment is delayed until the animals have been slaughtered, but before product is sold

3

Within 30 days of leaving the farm

4

Immediately, as soon as the stock leave the farm

### 4.2 Cost of Capital

Long term loans [% interest / year]

Short term loans [%/ “ ]

Lease finance [%/ “ ]

Equity finance : What is the long-run return sought on your own capital invested in your Emu business? [%/ annum ]

4.3.1 **Emu Profit** [Before owner operator labour and management, interest and taxation]

4.3.2 **Emu Operating Return** [Profit after owner operator labour and management, but before interest and taxation]

### 4.4 Financing

The total capital invested in our Emu business is financed by:

Long term Loans [% of total capital]

Short term Loans [% “ ]

Owned Vehicle and Equipment Finance [% “ ]

Non-owned Lease Finance [% “ ]

Special Stock Finance [% “ ]

Equity [% “ ]

**TOTAL CAPITAL AVAILABLE FOR OUR EMU BUSINESS**

## 4.5 Investment Structure

	\$A /other currency		\$A /other currency	
<b>Assets</b>	Consolidated value for all businesses (A)	% assigned to emu business (B)	Assignment formula	Value assigned to emus
<b>Current:</b>				
Cash & Financial			=A*B	
Livestock:				
Emus		100	=A*B	
Eggs		100	=A*B	
Other			=A*B	
Products:				
Emu Meat		100	=A*B	
Emu Skins		100	=A*B	
Emu Leather		100	=A*B	
Emu Feathers		100	=A*B	
Other			=A*B	
Fodder:				
Grain			=A*B	
Hay			=A*B	
Other			=A*B	
<b>TOTAL CURRENT</b>				
<b>Fixed:</b>				
Equipment				
Emu		100	=A*B	
Other			=A*B	
Motor Vehicles			=A*B	
Buildings				
Emu		100	=A*B	
Other			=A*B	
Land			=A*B	
<b>TOTAL FIXED</b>				
<b>TOTAL ASSETS</b>				

## 4.6 Outlook

### 4.6.1 Growth in Revenue

What is the expected average annual growth in stock numbers for your emu enterprise over the next 10 years?

### 4.6.2 Growth in Trading Profit

What is the expected average annual growth in your emu trading profit over the next 10 years?

### 4.6.3 Growth in Costs

What is the expected average annual growth in your emu enterprise costs over the next 10 years?

## Section 5: Social Situation

### 5.1 Holidays:

How many days of holidays did each person take on average in 1998-99?

By employees:

By owner managers:

### 5.2 Access to Leisure Facilities:

How far [km] is it to the nearest cinema, theatre or sport centre from your place of work?

### 5.3 Access to Human Health Care Facilities

How far [km] is it to the nearest hospital or community health centre from your place of work?

### 5.4 Further Education & Training

How many days of training did the owners and employees of your emu business undertake in 1998-99? [total days for all persons]

## Section 6: Environment & Sustainability of Emu Enterprise

### 6.1 Land and Water Practices

How sustainable are your existing emu management practices in terms of their long-term impact on your land, water and biodiversity resources?

Fully Sustainable	Largely Sustainable	Not in a position to judge	We have some concerns	Very Unsustainable
1	2	3	4	5

### 6.2 Economic Performance

How sustainable are your existing emu management practices in terms of their long term impact on your economic and financial position?

Fully Sustainable	Largely Sustainable	Not in a position to judge	We have some concerns	Very Unsustainable
1	2	3	4	5

## Appendix 2: Measurement Method Notes

The data analysed and the conclusions reached are based on a small sample size. The sample size in such surveys is always a limiting factor and may unduly influence results. In addition, the responses received are subject to significant non-sampling errors. Only 2 or 3 producers were able to respond fully to the questionnaire.

### 1. Table 1 [Annex 3] : Marketing

The accumulated responses are based on the simple sum of the scores for multiple choices in Section 1 of the survey [pages 22 and 23]. This approach assumes equal weighting for each of the 13 questions, with a maximum score of 52 indicating a very significant focus on marketing activities. Multiple choice answers were structured in order of the priority that the emu operator gave the issue/practice and answers were given a score of 1-4.

*For example: Questions 1&2 in the Customer Management Section asked your expenditure of time/money on marketing and provided four multiple-choice answers*

- (1) less than 1%                      Focus Score = 1*
- (2) 1 – 5%                              Focus Score = 2*
- (3) 5 – 10%                            Focus Score = 3*
- (4) more than 10%                   Focus Score = 4*

Please note that the score reflects the degree of focus and direction of resource allocation and there are no implications regarding competence or ability.

2. **Table 2. Innovation and Change** – this is based again on a series of multiple choice questions [Section 2, pages 24 and 25 of the survey] regarding the number of change projects introduced, increases to the number of changes, introduction of new emu products and fast release strategies, use of suppliers etc. to introduce change. A maximum score of 28 is possible. Again, this approach assumes equal weighting for each of 7 questions, with a maximum score of 28 indicating a very significant focus on innovation and change. Chart 2 shows the response to question 7 only of Section 2 of the survey.

## Appendix 3: Distribution of Emu Response Metric

**Table 1 : Marketing**

Measure	Top Producer	Most Frequent Response	Bottom Producer
% total expenditure on marketing	More than 10%	1-5%	Less than 1%
% of labour on marketing	More than 10%	1 - 5%	Less than 1%
Evaluations of post sales performance	Always	Occasionally	Never
Feedback about market requirements	Comprehensive	Enough to make decisions	None
Regular quality checks	Always	Occasionally	Never
Average defect rate %	Less than 1%	Less than 1%	More than 10%
Performance guarantee offered	Always	Always	Occasionally
Regularity of customer contact	Monthly	Monthly	Not often
Frequency of attendance at trade fairs	More than 5 times pa	More than 5 times pa	Never
Overseas travel for information	Occasionally	Never	Never
Expenditure on training and education	Occasionally	Occasionally	Never
Negotiation of prices and selling conditions	Always exchange views	Usually exchange views	Don't negotiate
Market research	Regular price research	Usually do price research	Very little research
Total Accumulated Score out of 100%	83%	64%	48%

**Table 2 : Innovation & Change**

Measure	Top	Most Frequent Response	Bottom
Number of change projects introduced	1-5 projects	1-5 projects	Zero
Main focus of change project	NA	Emu products (oil/leather)	NA
Increases to change projects	Up to 50% increase	No change	No change
Main reason for not introducing change	Other matters	Other matters	Government is responsible
New strains of emu livestock or products	More than 5	Zero	Zero
Process changed most often	NA	Feeding and Nutrition	NA
Employment of fast release strategies	Seek market leadership	Rely on natural selection	Rely on natural selection
Use of suppliers to get ideas for new strains of emu	Usually	No	No use of suppliers
Expense on training/education to improve capacity to change	Always	Occasionally	Never
Introduction of new information and technology	Latest computer/internet	New computer/internet	No computer/internet
Total Accumulated Score out of 100%	68%	49%	32%

**Table 3.1 : Production System**

Measure	Top	Most Frequent Response	Low
Intensiveness of feeding	NA	Mainly intensive	NA
Level of enterprise integration	NA	Fully integrated	NA
Product Focus	NA	Emus for oil	NA
Degree of ownership in management structure	NA	Owner/manager structure	NA
Measure	Top	Average	Low
Effective land area used in grazing emus	2000	207.7	3.0
Area of land used by sheds and other buildings	10.00	2	0.25

**Table 3.2 : Average Product Prices Received**

Measure	Highest Price	Average	Lowest Price
Live Emus (\$/per bird)	\$ 40.00	\$ 28.00	\$ 15.00
Emus Eggs (\$/per shell)	\$ 6.00	\$ 4.75	\$ 2.00
Emu Meat (\$/kg)	\$ 15.00	\$ 11.00	\$ 8.00
Emus Skins (\$/skin)	\$ 80.00	\$ 62.50	\$ 45.00
Emu Oil (\$/litre)	\$ 50.00	\$ 26.38	\$ 10.00

**Table 3.3 Production Parameters**

Measure	Top	Average	Low
Number of eggs incubated	150	28	0.0
Incubation temperature	NA	34	25.6
Relative humidity of incubator %	60%	47%	20%
Egg Fertility %	98%	87%	50%
% of Fertile eggs that hatch	96%	82%	50%
Number of breeding hens	2,000	279	6
Number of eggs laid per hen	36	23	5
Adult bird death rate%	0%	3%	20%
Survival % (from hatching 12 months)	99%	89%	70%
Slaughter age months (from largest % of animals slaughtered)	20	17	14.00
Average conversion ratio (kg of feed/kg of weight gained)	4.4	5.0	5.5

**Table 3.4 : Feed and Nutrition**

<b>(A) Feed Costs/Mt</b>	<b>Highest Cost Per Tonne</b>	<b>Average</b>	<b>Lowest Cost Per Tonne</b>
Chicks 0-2 months	\$ 550.00	\$ 370.00	\$ 280.00
Chicks 2-4 months	\$ 400.00	\$ 312.50	\$ 225.00
Chicks 4-6 months	\$ 250.00	\$ 220.00	\$ 190.00
Grower 6-10 months	\$ 200.00	\$ 195.00	\$ 190.00
Grower 10-12 months	\$ 200.00	\$ 195.00	\$ 190.00
Breeder	\$ 210.00	\$ 190.00	\$ 170.00
All Bird Average*	\$ 250.00	\$ 247.08	\$ 89.55

\*Please note that as several survey recipients did not give complete information on feed costs per bird type the overall average does not sit within the bird type range

<b>(B) Feeding Levels (kg feed/per day)</b>	<b>Highest Amount</b>	<b>Average</b>	<b>Lowest</b>
Chicks 0-2 months	0.20	0.14	0.10
Chicks 2-4 months	0.40	0.26	0.15
Chicks 4-6 months	0.92	0.61	0.50
Grower 6-10 months	1.12	0.88	0.80
Grower 10-12 months	2.00	1.10	0.90
Breeder	1.00	0.94	0.90
All Bird Average*	0.68	0.59	0.50

\*Please note that as several survey recipients did not give complete information on feed levels per bird type the overall average does not sit within the bird type range

<b>(C) Feeding Costs (\$/bird for period)</b>	<b>Highest Costs</b>	<b>Average</b>	<b>Lowest</b>
Chicks 0-2 months	\$ 4.20	\$ 3.40	\$ 2.70
Chicks 2-4 months	\$ 5.40	\$ 4.50	\$ 3.60
Chicks 4-6 months	\$ 13.80	\$ 10.32	\$ 6.84
Grower 6-10 months	\$ 26.88	\$ 22.56	\$ 18.24
Grower 10-12 months	\$ 10.26	\$ 9.39	\$ 8.52
Breeder	\$ 9.18	\$ 8.75	\$ 8.32
All Bird Average	\$ -	\$ 4.68	\$ -

<b>(D) Total Feeding Costs (\$/emu enterprise)</b>	<b>Highest Costs</b>	<b>Average</b>	<b>Lowest</b>
Total Feed Costs	\$ 30,100.00	\$ 13,077.00	\$ 455.00

**Table 3.5 : Health Practices and Facilities**

Measure	Top	Most Frequent Response	Low
Animal health security programme	Systematic bio security	No	No
Monitor of growth of animals through to hatching	Regular weight checks	No	No
Facilities for regular cleaning, disinfection & isolation of animals	Have facilities	No facility for regular disinfecting of buildings	No facility for regular disinfecting of buildings

**Table 3.6 : Labour**

Measure	Top	Average	Low
Number of people working on ostriches	4	2	1
Total hours on ostriches for the year	4,282	1,503	300
Months worked per person per year on egg incubation	7	2	2
Months worked per person per year on breeding birds	12	35	2
Months worked per person per year on growers	12	10	2
Months worked per person per year on chicks	12	6	3
Labour costs	\$ 85,000	NA	NA

**Table 3.7 : Freight**

Measure	Highest	Average	Low
Distance to nearest abattoir kms	350	214	70
Total outward freight costs	\$40 per bird	\$25 per bird	\$10 per bird
Total inward freight costs	NA	NA	NA

**Table 3.8 : Overheads**

Measure	Highest	Average	Low
Power costs	NA	\$ 2,551	NA
Fertiliser costs	NA	\$ 16	NA
Water costs	NA	\$ 489	NA
Repairs and maintenance costs	NA	\$ 2,665	NA
Pasture maintenance costs	NA	\$ 129	NA
Other costs	NA	\$ 4,004	NA
Total overhead costs	NA	\$ 9,379	NA

**Table 4 : Financial Structure and Financing**

Measure	Top	Average	Low
Method of stock payment	NA	Payment after animal slaughtered and sold	NA
Cost of Capital - long term loans	9%	7%	6%
- short term loans	15%	12%	9%
- lease	NA	10%	NA
- equity finance	20%	17%	15%
Profit	NA	NA	NA
Operating Return	NA	NA	NA
Capital financed by - long term loans%	46%	36%	25%
- short term loans%	NA	20%	NA
- owned vehicle and equipment finance%	NA	NA	NA
- non owned lease finance%	NA	NA	NA
- special stock finance%	NA	NA	NA
- equity%	100%	44%	NA
Total capital available	\$ 250,000.00	NA	NA
Livestock numbers growth forecast%	0%	0%	0%
Trading profit growth forecast%	10%	NA	0%
Enterprise costs growth forecast%	2%	NA	0%

**Table 5 : Social Factors**

Measure	Top	Average	Low
Average number of holidays taken by employees/year	NA	21.0	0.0
Average number of holidays taken by managers/year	NA	10.8	0.0
Access to leisure facilities in kms	NA	47.2	150.0
Access to human health care facilities in kms	NA	39.4	100.0
Days of further education and training	NA	4.1	0.0

**Table 6 : Sustainability**

Measure	Top	Most Frequent Response	Low
How sustainable are practices - land,water, bio-diversity	Fully sustainable	Largely sustainable	Not in a position to judge
How sustainable are practices - financial and economic position	Largely sustainable	Some concerns	Very unsustainable

## **PART B**

# **OSTRICH PRODUCTION BENCHMARKS**

# Executive Summary

This section describes the results of a survey of the work practices, processes and general operating environment faced by ostrich producing enterprises in the year ended June 1999 in Australia. Because the survey numbers are small and non-sampling errors large the estimates should be treated with caution.

The average farm surveyed had 49 breeding hens, running on 61 hectares of grazing land and 1.3 hectares of sheds and buildings. Almost all enterprises were fully integrated operations involving breeding, incubation and growing activities. Production systems involved typically intensive feeding with some grazing through pastures. The product focus was divided between meat, leather, eggs and live animal sales. All businesses were fully owned by the managers and there was little evidence of contract growing.

## **No respondent reported a profit for 1998/99**

The operator views on their long-term financial situation varied from largely sustainable to highly unsustainable. None reported an overall profit for 1998-99, although some operators are generating trading profits in meat, eggs and live ostriches. The average prices received for live ostriches was \$400/ bird; for eggs \$6.67/egg; for meat \$11.75/kilo and for skins \$200/skin.

## **Varying levels of economic sustainability amongst ostrich producers**

The 1998-99 Asian economic crisis has undoubtedly had an adverse impact on product prices received and, consequently, on overall profitability in that year and sustainability. However, the *variation* in sustainability amongst different ostrich producers can be partly explained through their differing attention to marketing and particularly, to innovation. Sustainable operations are allocating over 10% of their labour and expenditure to marketing and they are regularly monitoring their performance through post-sales support and almost daily customer contact. The most distinctive characteristic of sustainable operators is their attention to innovation. Innovation is important to survival in new and volatile global markets, such as ostrich production. Innovation differentiates producers and enables them to access markets and secure more stable demand and prices. The most profitable operators were regularly engaging in education, introducing new strains of livestock, and making use of suppliers and customers to do this. They actively seek leadership in the employment of fast release strategies to speed up the development and release of new technologies, work practices and support services for customers. In a situation of declining product prices and reduced market access, financial viability depends on the intensification of marketing, adjustment of work practices and improvement productivity.

**Innovation is fundamental to survival in a new and volatile global market**

Labour productivity and growth in productivity are the most critical variables in Australian agriculture and it is an area of significant variation among ostrich enterprises. While productivity generally increases with the

size of the enterprise, there was still significant variation in productivity amongst operations of the same size. The average farm allocated approximately 3 people to their ostrich production enterprise.

**Labour productivity depends on work practices, structure and size**

In general, a business needs to generate revenue of at least \$50/hour of labour input to be able meet the essential costs of labour expenses, feed and capital. If this cannot be achieved, the business must change work practices, structurally adjust or allocate its resources to a more profitable activity.

The economic challenge for producers is to get to a minimum sized economic operation of at least 35 active breeders and to achieve production benchmarks of:

- 83% egg fertility
- 80% survival rates
- 0-1% death rates
- 35 eggs per laying hen
- 0% skin defect rates

Almost all producers indicated defect rates of under 1%, which was contrary to defects reported by ratite processors who recorded significantly higher defect rates on the animals through bruising and skin damage. This could indicate either yard limitations, stock handling deficiencies, transport problems. Whatever the reason, the communication between producers and processors could be improved.

**Customer feedback is important to maintain a high production performance**

To achieve the improved work practices, processes and performance suggested above most producers need to substantially improve their data collection, storage and retrieval facilities. Most producers lack basic knowledge of their own feeding and breeding practices, labour use and enterprise profitability. The introduction of the GST will no doubt improve data collection facilities and practices and that will provide an opportunity for producers to simultaneously improve the data needed for sound farm management practices

**Improved information management will improve work practices**

The study recommends producers be encouraged to continue to participate in this benchmarking study and a new survey which will be distributed later in the year 2000 to those who participated in this study. The new survey will be integrated into a complete single survey for all new animal product industries. Growth in productivity over time is a critical factor in restoring profitability and continued participation in the benchmarking study is likely to facilitate progress

in this area. In addition, it is recommended that there be a training workshop/seminar on the benchmarking study results and the provision of further training in farm management decision making methods. For example, partial and capital budgeting and breeding and feeding management practices. The ultimate aim of the study is to improve skills in the management of ostrich enterprises and the benchmarking study simply provides material to help achieve that aim.

# 1. Introduction

The survey of production practices and outcomes of ostrich operations in Australia was designed to give operators a benchmark of a variety of business factors in their industry. The areas addressed were:

1. Customer management
2. Innovation and capacity to change
3. Production operations management
4. Financial management
5. Social situation
6. Environment and sustainability of enterprise

The following document provides an industry benchmark and an indication of relative position and performance. Annex 1 describes how performances were measured. Annex 2 contains the detailed tables with specific responses to each question. The survey sent to ostrich producers was similar to that sent to emu producers, a copy of which is contained in Annex 1 of Section A of the Report.

## 2. Marketing Management

The marketing focus of ostrich production operators varied significantly from 52% to 92% and averaged 79% [Chart 2]. The percentage was based on a series of quantifiable multiple-choice questions about various marketing issues faced by ostrich producers<sup>5</sup>. The survey responses reveal a positive relationship between economic sustainability and marketing and innovation. More sustainable operators allocated a greater proportion of time and expenditure on marketing and sales, particularly on post-sales support.

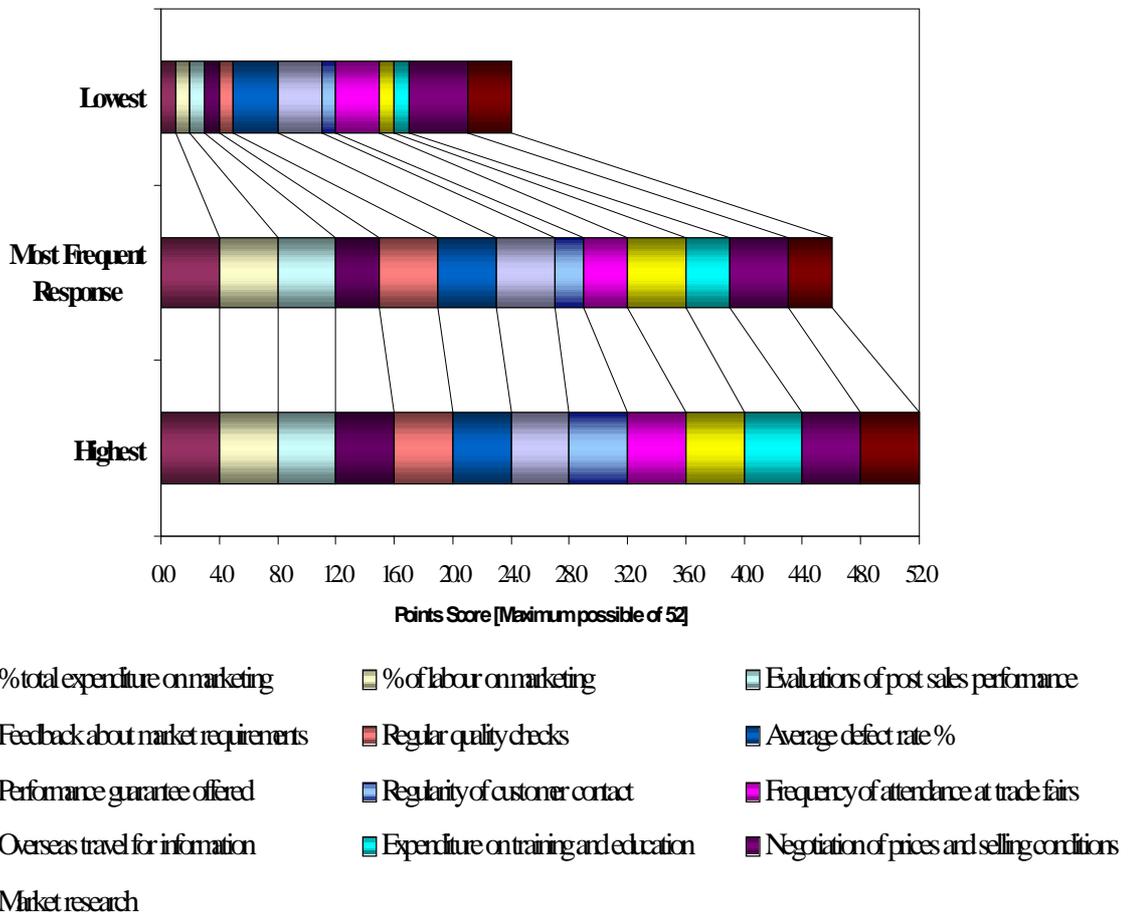
While most producers spent more than 10% of labour and expenditure on marketing, there was significant disparity in the results. The remaining producers indicated a level of between 0% and 5%. Nevertheless, marketing focus is slightly stronger for the ostrich industry than it is with emu production, although it remains a secondary concern to a smaller, but significant percentage of producers. Producers who score highly on one of the 13 marketing questions also tend to score relatively highly on the others. For instance, producers spending more than 10% of labour and time on marketing, are also travelling regularly to the international markets from which most of their demand emanates. That is there is correlation between the activities.

A marketing strength of the ostrich industry, is the consistent offer of a performance guarantee and the recorded skin defect rate of less than 1%. There is, however, an apparent difference between the defect rate recorded by producers and the meat and skin losses experienced by processors [refer to Part C]. This discrepancy is likely to be attributable to communication gaps between the two groups. The ostrich production industry is relatively weak in the regularity of customer contact, which typically only occurs monthly, rather than the weekly to daily importance it could command, though these results depend on enterprise size. Industry participants are also weak in seeking feedback regarding market requirements and in the allocation of funds for training, education and market research.

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<sup>5</sup> See Notes on Methodology (page 52) for more detailed description of assessment

**Chart 1 : Marketing**



Prices are always set in the industry through an exchange of views about prices and delivery conditions with the buyer. All operators did some research on ruling prices before selling, but there is little understanding of penalties for damaged skins.

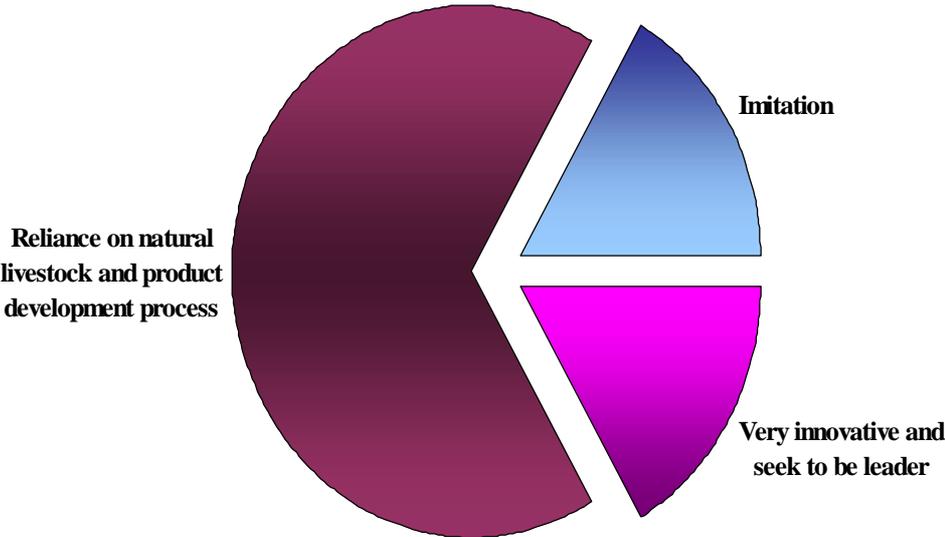
# 3. Innovation

The average percentage results for innovation were fairly low at 57%, although there was a significant range of 39% to 82%. Highly innovative ostrich enterprises were frequently very focused on marketing and generally, demonstrated greater economic sustainability. These enterprises were regularly introducing change to their operation, particularly in the area of improving or introducing new strains of ostrich livestock and products. They actively seek leadership of technological advances such as fast release strategies and consistently make use of suppliers, customers and research to achieve this. In addition, they allocate time and money to training in this area.

The key innovative strength of the ostrich industry is its occasional to frequent use of suppliers, research scientists and customers to design and get new ideas for strains of ostrich, livestock, new ostrich products and new support services. A typical ostrich producer introduces 1-5 changes to their enterprise each year and recognises that this is necessary to meet customer demands and market requirements. Most change projects have been focused on more precise feeding and nutritional management systems.

The most obvious weakness of the industry is in the area of fast release strategies, new products and new support services for customers. Ostrich operators were largely content with the natural livestock and product development processes and saw no real benefits in even imitating the innovators within the industry. Most operators did not introduce new or improved strains of ostrich livestock or products during 1998-99. Change is essential for operators to improve productivity, reduce skin damage and increase competitiveness.

**Chart 2 : Degree of Focus on Innovation Amongst Ostrich Operators**  
[% of respondents who approach innovation in this way]



# 4. Production Operations Management

All ostrich operators surveyed run an owner-managed and fully integrated incubation, breeding and growing enterprise. This is most likely attributable to the lack of profitability in the industry and the generally small size of the enterprise. The average farm size surveyed was 61 hectares and the average number of breeding hens was 49. There was some variation around this average, as some ostrich farmers have been using mainly extensive grazing production systems. While extensive grazing operations tend to have much larger farm sizes, they also demonstrate feed costs that are on average less than half that of an intensive operation.

Feeding of ostriches for optimal skin and meat production is a complex issue in terms of the joint products produced and potential for feed to affect product quality, skins and meat in particular. Clearly, the skin is the main product and therefore feeding practices need to optimise production of high quality skins. Average feed costs are shown in Chart 3, but there are significant differences in feeding costs/bird. [refer to Annex 3, Table 3.4]. For instance the all bird average cost of feed used by different producers ranged from \$178 to \$350 per tonne. The feed intake of 10-12 month old growers ranged from 1.0 to 2.7kg/day between different producers.

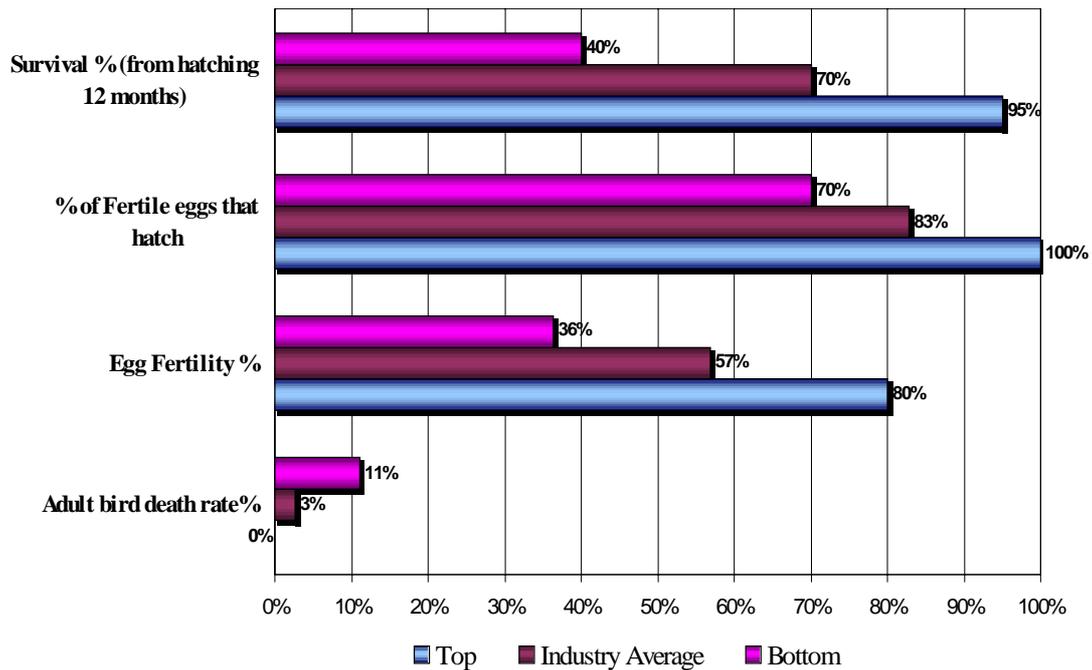
It appears that users of high cost feeds had lower overall feed costs as a result of the lower quantities fed out to birds, however, the survey was unable to evaluate the ultimate effect on productivity. Average feed costs paid by survey respondents appears in Chart 3. The average feed conversion ratio (kilo of live weight gained per kilo of feed) was 4.6, ranging from 8.0 to 2.3, the range reflecting animal age and size.

**Chart 3: Average Feed Costs**

<b>Average Feed Costs 2000</b>	<b>Feed costs per tonne</b>	<b>Kilos feed per day</b>	<b>Average Feed Costs Per Day</b>	<b>Average Feed Costs Per Annum</b>
Chicks 0-2 months	\$ 201.07	0.29	\$ 0.06	\$ 3.44
Chicks 2-4 months	\$ 226.17	0.57	\$ 0.13	\$ 7.77
Chicks 4-6 months	\$ 240.68	1.09	\$ 0.26	\$ 15.79
Grower 6-10 months	\$ 238.77	1.77	\$ 0.42	\$ 50.71
Grower 10-12 months	\$ 260.82	1.74	\$ 0.45	\$ 27.29
Breeder	\$ 248.78	2.15	\$ 0.53	\$ 194.78
All Bird Average	\$ 236.05	1.27	\$ 0.31	NA

Significant variation was again observed in production parameters. Top operators in the area of technical performance achieved over 80% egg fertility, 95% survival rates 12 months from hatching and 0-1% death rates. Other industry average performances can be seen in the following Chart 4.

**Chart 4 : Comparative Technical Practices Ostrich Farming 2000**



Almost all enterprises have impact on productivity. Furthermore, it is evident from the survey that these avenues to profitability have not yet been exhausted.

As a starting point, operators need to estimate the unit cost of labour and time allocated to their ostrich enterprise and accept that their own labour has a significant opportunity cost to it. Every labour unit in Australia has to generate at least \$50/hour to pay for labour expenses, feed, overheads and marketing and provide some modest return to the capital employed.

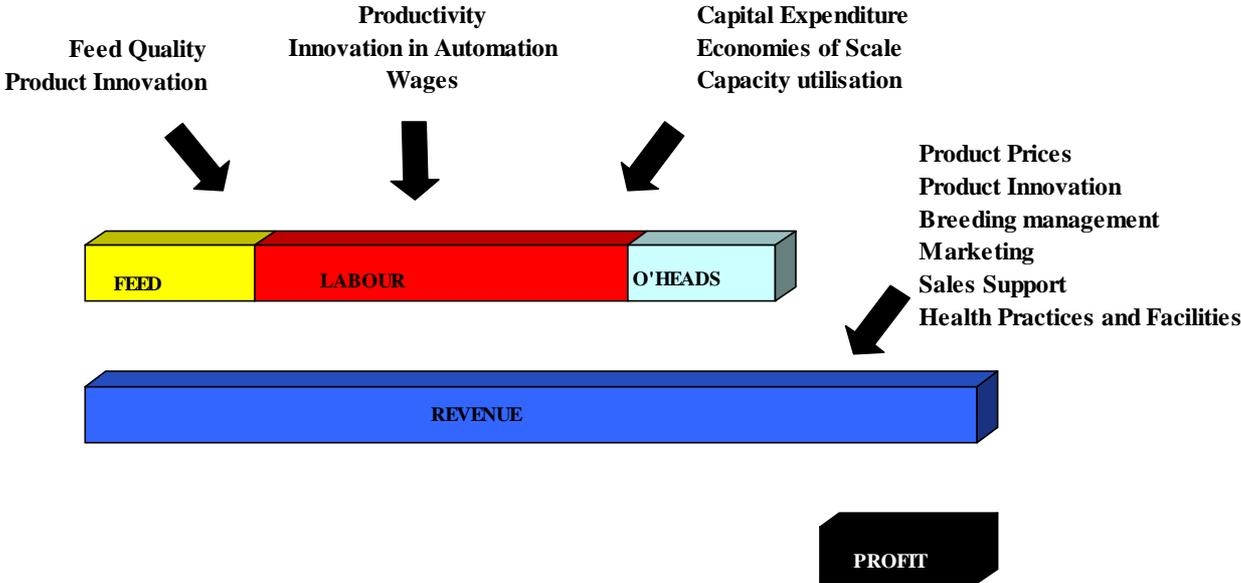
Ostrich enterprises are generally quite strong with respect to animal health practices and facilities for security of livestock. Almost all enterprises had a systematic weighing and monitoring program that allows early detection of any departures from normal growth.

Most farms were within 200km of an abattoir, although there were some notable exceptions. Outward freight costs to the abattoir ranging from \$5 to \$60/bird. These costs, coupled with slaughter costs at some abattoirs as high as \$90-\$100, can render the recovery of meat very difficult. There is a clear need for more competition among processors, particularly in Western Australia where slaughtering fees are, or were at the time of the survey, some 50% higher than in the Eastern States. But competition in the processing of emus and ostriches is difficult to generate because of economies of scale and the small size of the industry. One option to examine further is the potential for a mobile abattoir with an export permit to deliver a service to producers in the more remote regions.

# 5. Financial

Most farmers had concerns about the long-term sustainability of their economic and financial positions. This was attributed to a variety of factors, including lack of demand and poor prices. The key drivers of profitability in ostrich production are livestock trading revenue, feed costs and labour. From a macro perspective of management these are the three main drivers of ostrich enterprise performance. Chart 5 shows this structure in a conceptual framework. They need to be dealt with systematically and comprehensively. Lack of attention to any one section can undermine performance of the whole enterprise.

**CHART 5 : Key Performance Indicators For Profitability**



A simplified, but more detailed, decision framework for managing trading revenue and costs is shown in Part A on page 12.

## 6. Social and Environmental Situation

To further understand the social conditions of producers we examined also their living environments. The average producer lives about 52km from the nearest leisure facilities such as cinema, shopping centres etc. and about 20km from the nearest hospital.

The average number of holidays taken by employees is about 20 days/year and for managers it is about 4 days. Managers of ostrich enterprises take less holidays than their counterparts in emu enterprises [10 days], but in return they appear to be more profitable and have a more optimistic view of the sustainability of their enterprise.

Most operators spent no time on further training and education, although the top operator spent 14 days.

## 7. Conclusions

The economic challenge for ostrich producers is to get to an optimal sized economic operation of at least 35 active breeders. More importantly, however, is to achieve technical benchmarks of 83% egg fertility, 80% survival rates, 0-1% death rates, 35 eggs per laying hen and 0% defect rates. Prices received should exceed the industry best practice standard of \$400/live ostrich and \$250/skin and \$12/kilo of meat.

In addition, ostrich producers require meticulous management practices to optimise productivity from feed at all ages; a major allocation of resources to marketing [at least 10% of total expenditure and labour hours available]; and a preparedness to innovate and change structures and work practices at least 10 times each year. There is considerable scope to improve the quality of skins and yield of saleable meat through selection of improved breeds and better stock handling.

# 8. Appendices

## Appendix 1: Notes on Methodology

The data analysed and the conclusions reached are based on a small sample size. The sample size in such surveys is always a limiting factor and may unduly influence results. In addition, the responses received are subject to significant non-sampling errors. Only 2 or 3 producers were able to respond fully to the questionnaire.

### 1. Table 1 [Annex 3] : Marketing

The accumulated responses are based on the simple sum of the scores for multiple choices in Section 1 of the survey [pages 22 and 23]. This approach assumes equal weighting for each of the 13 questions, with a maximum score of 52 indicating a very significant focus on marketing activities. Multiple choice answers were structured in order of the priority that the emu operator gave the issue/practice and answers were given a score of 1-4.

*For example: Questions 1&2 in the Customer Management Section asked your expenditure of time/money on marketing and provided four multiple-choice answers*

<i>(5) less than 1%</i>	<i>Focus Score = 1</i>
<i>(6) 1 – 5%</i>	<i>Focus Score = 2</i>
<i>(7) 5 – 10%</i>	<i>Focus Score = 3</i>
<i>(8) more than 10%</i>	<i>Focus Score = 4</i>

Please note that the score reflects the degree of focus and direction of resource allocation and there are no implications regarding competence or ability.

3. **Table 2. Innovation and Change** – this is based again on a series of multiple choice questions [Section 2, pages 24 and 25 of the survey] regarding the number of change projects introduced, increases to the number of changes, introduction of new emu products and fast release strategies, use of suppliers etc. to introduce change. A maximum score of 28 is possible. Again, this approach assumes equal weighting for each of 7 questions, with a maximum score of 28 indicating a very significant focus on innovation and change. Chart 2 shows the response to question 7 only of Section 2 of the survey.

## Appendix 2: Distribution of Ostrich Response Metric

<b>Table 1 : Marketing</b>			
<b>Measure</b>	<b>Top</b>	<b>Most Frequent Response</b>	<b>Bottom</b>
% total expenditure on marketing	More than 10%	More than 10%	Less than 1%
% of labour on marketing	More than 10%	More than 10%	Less than 1%
Evaluations of post sales performance	Always	Always	Never
Feedback about market requirements	Comprehensive	Enough to make decisions	None
Regular quality checks	Always	Always	Never
Average defect rate %	Less than 1%	Less than 1%	From 5-10%
Performance guarantee offered	Always	Always	Occasionally
Regularity of customer contact	Almost daily contact	Monthly contact	Never
Frequency of attendance at trade fairs	More than 5 times pa	2 -5 times pa	Once pa
Overseas travel for information	At least once pa	At least once pa	Never
Expenditure on training and education	Always	Occasionally	Never
Negotiation of prices and selling conditions	Always exchange views	Always exchange views	Always exchange views
Market research	Systematic approach	Regular market research	Regular market research
Total Accumulated Score out of 100%	92%	NA	52%

<b>Table 2 : Innovation &amp; Change</b>			
<b>Measure</b>	<b>Top</b>	<b>Most Frequent Response</b>	<b>Bottom</b>
Number of change projects introduced	5-10	1-5	0
Main focus of change project	NA	Feeding and Nutrition	NA
Increases to change projects	Up to 50% increase	No change	No change
Main reason for not introducing change	NA	Customer pressures	NA
New strains of emu livestock or products	More than 5 pa	None	None
Process changed most often	NA	Feeding and Nutrition	NA
Employment of fast release strategies	Seek market leadership	Rely on natural development process	Rely on natural development process
Use of suppliers to get ideas for new strains of emu	Always	Always	No
Expense on training/education to improve capacity to change	Always	Occasionally	Never
Introduction of new information and technology	New computer/internet	New computer/internet	No computer/internet
Total Accumulated Score out of 100%	82%	NA	39%
<b>Table 3.1 : Production System</b>			
<b>Measure</b>	<b>Most Frequent Response</b>		
Intensiveness of feeding	Mainly intensive some pastures		
Level of enterprise integration	Fully integrated		
Product Focus	Multiple products		
Degree of ownership in managment structure	Own and manage all birds		
<b>Measure</b>	<b>Highest</b>	<b>Average</b>	<b>Lowest</b>
Effective land area used in grazing emus	300.0	60.8	0.5
Area of land used by sheds and other buildings	3.0	1.3	0.0

<b>Table 3.2 : Average Product Prices Received</b>			
<b>Measure</b>	<b>Highest Price</b>	<b>Average</b>	<b>Lowest Price</b>
Live ostriches (\$/bird)	\$ 400.00	\$ 400.00	\$ 400.00
Ostrich eggs (\$/egg)	\$ 10.00	\$ 6.67	\$ 5.00
Ostrich meat (\$/kg)	\$ 12.00	\$ 11.75	\$ 11.50
Ostrich skins (\$/skin)	\$ 250.00	\$ 200.00	\$ 150.00
Ostrich feathers (\$/kg)	NA	NA	NA
<b>Table 3.3 Production Parameters</b>			
<b>Measure</b>	<b>Highest</b>	<b>Average</b>	<b>Lowest</b>
Number of eggs incubated	2,740	876	14
Incubation temperature	37	36	36
Relative humidity of incubator %	20%	18%	16%
Egg Fertility %	83%	61%	36%
% of Fertile eggs that hatch	100%	80%	70%
Number of breeding hens	200	49	1
Number of birds produced	1328	372	7
Number of eggs laid per hen	60	29	7
Adult bird death rate%	11%	3%	0%
Survival % (from hatching 12 months)	95%	67%	35%
Slaughter age months (from largest % of animals slaughtered)	18	15	12
Average conversion ratio (kg of feed/kg of weight gained)	2.30	4.60	8.00

<b>Table 3.4 : Feed and Nutrition</b>			
<b>(A) Feed Costs/Mt</b>	<b>Highest Cost Per Tonne</b>	<b>Average</b>	<b>Lowest Cost Per Tonne</b>
Chicks 0-2 months	\$ 266.67	\$ 201.07	\$ 105.00
Chicks 2-4 months	\$ 266.67	\$ 226.17	\$ 181.11
Chicks 4-6 months	\$ 315.00	\$ 240.68	\$ 161.96
Grower 6-10 months	\$ 330.00	\$ 238.77	\$ 162.22
Grower 10-12 months	\$ 330.00	\$ 260.82	\$ 162.04
Breeder	\$ 350.00	\$ 248.78	\$ 185.19
All Bird Average	\$ 350.00	\$ 253.49	\$ 178.16
*Please note that as several survey recipients did not give complete information on feed costs per bird type the overall average does not sit within the bird type range			
<b>(B) Feeding Levels (kg feed/per day)</b>	<b>Highest Amount</b>	<b>Average</b>	<b>Lowest</b>
Chicks 0-2 months	0.50	0.29	0.07
Chicks 2-4 months	1.00	0.57	0.15
Chicks 4-6 months	1.36	1.09	0.92
Grower 6-10 months	2.38	1.77	1.20
Grower 10-12 months	2.72	1.74	1.00
Breeder	4.50	2.15	1.00
All Bird Average	1.54	1.23	0.66
<b>(C) Feeding Costs (\$/bird for period)</b>	<b>Highest Costs</b>	<b>Average</b>	<b>Lowest</b>
Chicks 0-2 months	\$ 8.00	\$ 4.26	\$ 0.78
Chicks 2-4 months	\$ 16.00	\$ 8.54	\$ 1.63
Chicks 4-6 months	\$ 20.00	\$ 14.47	\$ 8.94
Grower 6-10 months	\$ 32.00	\$ 23.30	\$ 14.60
Grower 10-12 months	\$ 41.00	\$ 29.25	\$ 17.50
Breeder	\$ 50.00	\$ 30.33	\$ 17.50
All Bird Average	\$ 21.41	\$ 15.04	\$ 8.22
<b>(D) Total Feed Costs (\$/ostrich enterprise)</b>	<b>Highest Costs</b>	<b>Average</b>	<b>Lowest</b>
Total Feed Costs	\$ 140,000	\$ 40,631	\$ 624

<b>Table 3.5 : Health Practices and Facilities</b>			
<b>Measure</b>	<b>Top</b>	<b>Most Frequent Response</b>	<b>Low</b>
Animal health security programme	Systematic bio-security programme	Check for most things, not everything	No
Monitor of growth of animals through to hatching	Systematic weighing and monitoring programme	Systematic weighing and monitoring programme	No
Facilities for regular cleaning, disinfection & isolation of animals	Check weights regularly	Check weights regularly	No
<b>Table 3.6 : Labour</b>			
<b>Measure</b>	<b>Top</b>	<b>Average</b>	<b>Low</b>
Number of people working on ostriches	5	3	1
Total hours on ostriches for the year	10,700	NA	NA
Months worked per person per year on egg incubation	12	9	6
Months worked per person per year on breeding birds	12	12	12
Months worked per person per year on growers	12	12	12
Months worked per person per year on chicks	12	9	6
Labour costs	\$ 130,250	\$ 123,365	\$ 116,480
<b>Table 3.7 : Freight</b>			
<b>Measure</b>	<b>Highest</b>	<b>Average</b>	<b>Low</b>
Distance to nearest abattoir kms	1,500	430	100
Total outward freight costs	\$ 44,700	\$ 14,423	\$ 80
Total inward freight costs	-	-	-

<b>Table 3.8 : Overheads</b>			
<b>Measure</b>	<b>Highest</b>	<b>Average</b>	<b>Low</b>
Power costs	\$ 16,000	\$ 6,391	\$ 5
Fertiliser costs	\$ -	\$ -	\$ -
Water costs	\$ -	\$ -	\$ -
Repairs and maintenance costs	\$ 9,750	\$ 4,626	\$ 879
Pasture maintenance costs	\$ 300	\$ 300	\$ 300
Other costs	\$ 250,000	\$ 60,379	\$ 100
Total overhead costs	\$ 272,860	\$ 59,556	\$ 100

<b>Table 4 : Financial Structure and Financing</b>			
<b>Measure</b>	<b>Highest</b>	<b>Average</b>	<b>Lowest</b>
Method of stock payment	NA	Payment delayed until animals slaughtered	NA
Cost of Capital	\$ 110,000	NA	\$ -
% of capital financed by - long term loans	100%	58%	15%
- short term loans	0%	0%	0%
- lease	0%	0%	0%
- equity finance	0%	0%	0%
Total capital available	\$ 1,607,100.00	NA	\$ -
Livestock numbers growth forecast%	10%	18%	10%
Trading profit growth forecast%	10%	10%	10%
Enterprise costs growth forecast%	8%	11%	8%

<b>Table 5 : Social Factors</b>			
<b>Measure</b>	<b>Highest</b>	<b>Average</b>	<b>Lowest</b>
Average number of holidays taken by employees/year	20	20.0	20.0
Average number of holidays taken by managers/year	15	3.8	0.0
Access to leisure facilities in kms	80	52.7	5.0
Access to human health care facilities in kms	40	19.5	3.0
Days of further education and training	14	3.0	0.0

<b>Table 6 : Sustainability</b>			
<b>Measure</b>	<b>Highest</b>	<b>Most Frequent Response</b>	<b>Lowest</b>
How sustainable are practices - land,water, bio-diversity	Highly sustainable	Largely sustainable	Very unsustainable
How sustainable are practices - financial and economic position	Largely sustainable	Very unsustainable	Very unsustainable