



Australian Government
Rural Industries Research and
Development Corporation

Farming and Marketing Goat and Sheep Milk Products



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Development Corporation**

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by A. K. Stubbs & G. L. Abud

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Foreword

The aims of this project were to define market requirements and to promote farming and manufacturing practices which best match product demand in the goat and sheep milk industries.

The dairy goat and dairy sheep industries in Australia that have grown steadily, particularly in the last decade, from small scale, often unstable, cottage type enterprises to increasingly organised and market oriented businesses. This growth has been led by increasing demand for specialist cheeses similar to European styles.

These industries are still at a stage where the supply/demand inequalities that occur, particularly in milk supply, underline the necessity for efficiency of production from farm to market, and in particular gearing of production to market demand.

Several recent RIRDC projects have investigated various aspects of farm productivity, product options and marketing in the dairy goat and sheep industries. These projects have amassed a wealth of information. Although considerable progress has been made through these research efforts, each project has recommended that more work is needed on various aspects of farming and marketing goat and sheep milk products. Generally speaking, the results will be applicable to each industry.

By combining and building on this library of past knowledge, and in collaboration with industry manufacturing and marketing bodies, this project gives a guide to the best practices, from farm to market, for increased consumer acceptance and viability of these new animal industries. This will have a positive impact on many rural communities across Australia.

This project was funded from RIRDC Core Funds which are provided by the Australian Government.

This report, an addition to RIRDC's diverse range of over 1800 research publications, forms part of our New Animal Products R&D program, which aims to accelerate the development of viable new animal industries.

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Peter O'Brien

Managing Director

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Once again, the guidance, encouragement and counsel of Dr Peter McInnes, Research Manager, for this project is gratefully acknowledged. His continued support for ongoing work to develop the dairy goat and sheep industries in Australia is not well known but is vital to the future prosperity of industry stakeholders.

Many industry people, including producers, processors and marketers, and previous researchers contributed to the information gained and conclusions printed on the following pages. Without their willing co-operation and thoughtful insights the project would not have achieved much.

As was found in 1998, the New Zealand farmers and processors visited were very forthcoming in their discussions and helped provide useful comparisons and valuable lessons for Australian industries.

Abbreviations

ANZ – Australia New Zealand
AQIS – Australian Quarantine Inspection Service
ASCA – Australian Specialist Cheesemakers’ Association
BJD – Bovine Johnes Disease
CAE – Caprine Arthritis Encephalitis
DA – Dairy Australia
DFSV – Dairy Food Safety Victoria
MAF – Ministry of Agriculture & Fisheries (NZ)
NZDFSA – New Zealand Dairy Food Safety Authority
OJD – Ovine Johnes Disease
QA – Quality Assurance
SCC – Somatic Cell Count
UHT – Ultra Heat Treatment

About the Authors

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Both authors were engaged in the previous RIRDC project on this general subject, “Dairy Goat Farming Practices for Specialty Cheese and Other Products”, available as RIRDC Publication No 03/057.

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Executive Summary

About the Report

This report summarises the current status of the dairy goat and sheep industries in Australia. It includes a synopsis of present research knowledge relevant to farming practices and market opportunities, collection of information on contemporary farming methods and product demand, and production of farm business management manuals relevant to the two industries.

The main importance of this research is that the report and the manuals will be up to date technical and economic guides for current and prospective industry participants and will assist the industries to grow sustainably and profitably in the future.

Target of the Report

The report and the manuals are for the particular information of current and potential industry stakeholders, including producers, processors, marketers, researchers, industry organisations and government agencies.

Background

Several recent RIRDC projects have investigated various aspects of farm productivity, product options and marketing in the dairy goat and sheep industries.

These projects have amassed a wealth of information, albeit in different formats, some of which is now non-current. Although considerable progress has been made through these research efforts, each project has recommended that more work is needed on various aspects of farming and marketing goat and sheep milk products. Generally speaking, the results will be applicable to each industry.

Aims/Objectives

The overall aim of the project was to identify the best current and future prospects for goat and sheep milk products relative to market trends and industry supply capacity. A specific objective was to increase the productivity and profitability in the goat and sheep milk industries by defining market requirements and promotion of best farming and manufacturing practices to match product demand. The project was also aimed to identify current best practices in breeding, feeding and management on farms. This, together with optimum approaches for storage and transport of milk and milk processing, will achieve guidelines for more efficient and profitable production for all sectors of the industry.

Methods

Desk top research was conducted to examine and compile all current information relevant to the objective.

Consultation then occurred with previous researchers, producers and manufacturers throughout Australia, industry bodies such as The Australian Specialist Cheesemakers Association (ASCA), and interested government agencies about industry potential and methods of obtaining the project objectives.

Sample market surveys, involving consumers, retailers, distributors and manufacturers, and focussing on selected urban areas, were conducted during the project, specifically related to goat and sheep milk product demand, preferences and knowledge.

The technical dairy goat farm management manual developed in Project PTP-11A was updated and a separate manual was produced to cater for dairy sheep farming following consultation with producers and others during regional visits.

A study tour to New Zealand was made to examine the current state of the dairy goat and sheep industries in that country in comparison with Australia, a similar exercise to that conducted in 1998 on the dairy goat industry.

Results/Key Findings

Australian Situation

- There are about 65 commercial dairy goat farms, carrying close to 12,000 goats, and 15 factories processing goat milk in Australia. Nearly one third of the goat farms process their own milk but range considerably in size from farmhouse operations to relatively large processors.
- Total production of milk is now about 6 million litres per annum of which around 60% goes into cheese production, 35% sold as whole milk, and the balance increasingly to powder. Total value of production is about \$30 million.
- Victoria accounts for 30% of production, Queensland about 25%, Tasmania about 15%, whilst South Australia, New South Wales and Western Australia produce about 15%, 10% and 5% respectively of the total.
- The domestic market is growing steadily, particularly for specialty cheese, and domestic production is capturing an increasing share of this market from imported cheeses. Export activity is also growing.
- Eight commercial dairy sheep farms, carrying an estimated 4000 sheep, currently produce on a regular basis, two each in South Australia, Tasmania and Western Australia, and one each in Victoria and Queensland. All but one producer processes their own product, more than half the output being yoghurt and the balance made into cheese
- Total production is estimated at about 500,000 litres per annum, about 40% of which is in Victoria. South Australia and Tasmania produce most of the balance. Total value of production is close to \$4 million. Yoghurt sales are steady however there is increasing interest in locally produced sheep cheese.

Market Surveys

Results were very encouraging for Australian stakeholders in that local products were more than holding their own with imported alternatives, even at a slightly higher price. Display and presentation of Australian cheeses, milk and yoghurt was generally very attractive to consumers. The range of Australian goat cheese available is quite extensive, much more so than sheep cheese.

Goat milk and sheep yoghurt, although representing only a fraction of the cheese market, are in steady demand. Organic/biodynamic product sales were reported as slow or small by all retailers questioned.

Farming & Marketing Practices, Problems & Opportunities

Farming Practices

- Specialised dairy goat breeds are readily available, much more so than for dairy sheep which rely on crosses of prime lamb breeds with a limited source of milking sheep breeds from the northern hemisphere. Many producers strive to improve the genetic merit of their dairy animals through production recording and selection however there are no industry wide herd or flock improvement programs
- Year round milk production is more often seen in dairy sheep flocks through periodic mating during the year whereas seasonal production tends to be the norm in dairy goat herds, leading to supply shortages during the cooler months.
- Most farms use some pasture but the degree of management of this is very variable, some is simply rangeland, much is set stocking and some is highly managed rotational grazing. Many farms are not in the most productive country. Housing of stock with little or no grazing is increasing, more so with dairy goats, however the economics of this practice is highly dependent on milk prices
- The incidence of health issues are higher with dairy animals than for extensively grazed and managed stock and are a constant concern for producers

- Veterinary information and interest is unfortunately lacking for dairy goats and sheep and the recommendations for use of drugs have little relevance to milking animals.

Marketing Practices

- The range of marketing practices is from one end of the spectrum to the other, due in part to the enormous range in size of enterprises which often reflects the attitude of producers to their business, be it a modest farm shop operation or a vertically integrated business from farm to market
- Marketing procedures and channels are also influenced by the market sector being targeted, which includes organic products, and the outlets such as farm shops, farmers markets, health food stores, specialty food delicatessens, food service businesses and supermarkets.
- Individual producers either do their own processing, marketing and distribution, engage distributors or have arrangements with retailers, or a combination of all these approaches. There is a mix of price setters and price takers.

Problems

- There is a general lack of targeted, tested information in most areas. Distance and time constraints also limit information sharing between producers.
- Many enterprises are too small to be viable (as stand-alone entity) and producers do not always have realistic information or expectations.
- Flocks and herds are often located in areas that are less productive than established dairying areas.
- Milk supply issues cause problems with processing and markets. Seasonal production makes flock or herd management easier and provides time off.
- Out of season breeding has technical problems as well as management and workload problems.
- Health issues (viability) is a threat especially of kids and lambs, but also does.
- Generally veterinary knowledge is poor and interest from vets may be low.
- Distance from markets is a constraint especially for smaller producers whose relative costs are high due to lower volumes.
- Quality stock are hard to find.
- Milk quality and milk residue issues are only partially addressed.
- Regulatory changes and increasing compliance costs place greater pressures on producers
- Difficulties occur in placing small quantities of product.
- Lack of year round supply is a constraint identified by processors and distributors.

Opportunities

- Both are growing industries and past the very early unpredictable stage. They are part of a developed world interest in specialty and 'healthy' food.
- There is unmet demand for milk, both liquid and for manufacturing, over many years
- Opportunities are available for farmers especially dairy farmers looking to diversify or change
- Plant is presently available secondhand from dairy farms.
- Information from the dairy sector is helpful although it has been noted by several producers that goats and sheep are much more difficult than cows.
- "Sea Change"- lifestyle opportunities exist.
- For innovative enterprises there are opportunities: gourmet products, regional partnerships in this, links to tourist type ventures and parallel activities, eg café/restaurant, cheesemaking classes, farmstay. There are also opportunities to developing one to one relationships in marketing, eg farmers markets; lifestyle choice.

New Zealand Situation

A visit to New Zealand occurred in late 2006 to examine the current state of the dairy goat and sheep industries in comparison to Australia.

The dairy goat industry was found to be in very good and stable shape, mainly due to the export activities of the New Zealand Dairy Goat Co-op. The number of farms was estimated at about 90 and total goat numbers around 27,000 with a total production of 15 million litres, more than double the

size of Australia's industry. The success of the Co-op. shows the benefits of a co-ordinated industry approach. Farming practices were generally a little more advanced than in Australia with a predominance of housing and zero grazing of stock.

The dairy sheep industry was similar in total size to that in Australia with similar farming and marketing practices in general, except for one large producer. Access to imported breeds in the 1990's has given New Zealand dairy sheep producers an edge in production levels per animal. The industry is at about the same stage as in Australia but will be more heavily reliant on exports for growth.

Implications

- Both the dairy goat and dairy sheep industry in Australia are in a generally healthy state, growing steadily and with considerable apparent potential for current participants and for newcomers. As with any relatively small industry however, growth rate must be prudently managed to avoid the boom and bust cycle that can so easily occur.
- The importance of experience and expertise in either dairy goat or dairy sheep farming cannot be overestimated.
- Critical mass of the industry is important and is needed for stability. Size is important for the sheer volume needed for effective marketing to satisfy a developing market demand for product, for economies of production runs, and also for the cushioning effect of being able to plan production according to supply to a greater extent.
- Smaller farms may have difficulties in supply and have less ability to economically manage farms and deliver milk. Many costs are the same for large and small quantities of production and the trend for fewer but larger farms appears to confirm this. Some herds are now milking more than 1000 does or sheep.
- Some synchronicity of development is beneficial to an industry. The early New Zealand goat co-ops had problems when supply of milk outstripped demand. In Australia, cheesemakers and farms have kept pace to a greater extent with much less pain to both.
- Location of the industries in suitable dairy type country which has dairy industry knowledge and facilities would be helpful. This is not so apparent in sheep dairying at this point.
- Co-operation within the sector/s is likely to occur for pragmatic reasons. Milk in New Zealand is traded across organisation boundaries according to the need.
- Very large integrated enterprises may be able to manage milk production, processing and marketing in-house.
- In the absence of such enterprises, a high degree of industry co-operation/structure may be needed. In New Zealand the Dairy Goat Co-op, which deals in long life products, fills this role. In Australia, where farms tend to each have their own single outlet, the potential for industry co-operation at farm level is less convincing at this stage of industry development. The development of long life products with centralised processing could change this with more immediate common interest on the part of farmers.
- Dairy goat breed societies in both countries offer some opportunities for contacts with others, both in and out of the commercial sector, and overseas.
- For processors, industry co-ordination may offer Australia advantages in marketing co-operation and branding as the wine industry has shown. Australian Specialist Cheesemakers' Association (ASCA) has been important in product promotion and lobbying.
- Housing of dairy goats may provide a positive benefit and cost ratio as long as price sensitivities allow.
- Breeding, feeding and management of dairy sheep in Australia appears to be satisfactory and is generally similar to New Zealand practices.

Recommendations

- Research and development must be continued into most aspects of farming practices for dairy goats and sheep as these enterprises have essential differences to conventional dairy cow farming. Important areas for investigation include breeding systems for uniform annual production, economical feeding regimes maximising the use of farm grown feed, milking management for longer lactation periods and higher production levels, effects of milk quality on product yield and quality, and animal health issues, particularly optimum methods for use of drugs and chemicals.
- Industry wide genetic improvement schemes are needed to replace the individual herd or flock programs which some, but not all, producers practise. Ideally these schemes will source superior genetic material from overseas, particularly for dairy sheep.
- Industry co-ordination, through producer and processor representative bodies as exists in the dairy cow industry, and which was attempted previously in the dairy goat industry, must be pursued instead of the ad hoc liaison that exists at the moment. This can yield benefits from industry and product publicity, monitoring industry changes, surveying market preferences, exploration of export opportunities, and negotiation with government agencies.
- Greater encouragement and assistance for these niche industries must be provided by all levels of government rather than the degree of over regulation or policing that currently applies together with fees that are inequitable for smaller enterprises.
- The industries should be reviewed again within the next decade to measure changes that have occurred and to identify optimum production, processing and marketing practices that have been developed and can be promoted to all stakeholders.

1. Introduction

Several recent RIRDC projects have investigated various aspects of farm productivity, product options and marketing in the dairy goat and sheep industries.

For dairy goats, Project DGS-1A led the way in demonstrating the value of pastures in nutrition. Projects PTP-8A & 11A followed by defining optimum low cost farming practices based on pasture grazing for regular supply of milk for cheesemaking. These projects also initiated farm and market surveys, developed a farm management manual and a prototype computer system, studied dairy goat industries in other countries, and promoted development through creation of an industry organisation.

Projects UMO-18A & 24A showed that successful year round kidding, and consequently a more even milk supply pattern, could be achieved by use of synthetic substances and light variation to manipulate goats' natural breeding behaviour. Project DAV-172A revealed export opportunities in Asia for goat milk powder, cheese and UHT milk.

For dairy sheep, Projects AWA-2A and CCH-1A have demonstrated successful, commercial scale farm management and breeding procedures aimed at cheese production and investigated the potential for sheep milk powder. Projects UWA-23A and UWA-44A compared breeds of dairy sheep and tested acceptance of specialist cheeses and icecreams made from sheep milk. Project UWA-66A further investigated the benefits of various sheep genotypes and influencing sheep milk composition, the latter being continued in Project UWA-84A which also examines correlations between temperament and ease of milking.

Project DRL-1A investigated genetic improvement options for both dairy goats and sheep, based on European experience in these industries, and recommended workable systems for Australia. Project UMO-35A is also aimed at improving the rate of genetic improvement in dairy sheep by identifying parameters for production recording and management strategies.

These projects have amassed a wealth of information, albeit in different formats, some of which is now non-current. Although considerable progress has been made through these research efforts, each project has recommended that more work is needed on various aspects of farming and marketing goat and sheep milk products. Generally speaking, the results will be applicable to each industry.

This project aims to identify the best current and future prospects for goat and sheep milk products relative to market trends and industry supply capacity. This process was done in concert with producers and manufacturers, engendering a team approach and understanding of farm to market requirements regarding quantity and quality. This will encourage a more cohesive industry, responsive to market changes when they occur. Identification of current best practices in breeding, feeding and management on farms, together with optimum approaches for storage and transport of milk and milk processing, will achieve guidelines for more efficient and profitable production for all sectors of the industry.

2. Objectives

Increased productivity and profitability in the goat and sheep milk industries by definition of market requirements and promotion of best farming and manufacturing practices to match product demand.

3. Methodology

Desk top research was conducted to examine and compile all current information relevant to the objective. This included: a thorough review of the results and recommendations of the projects referred to in the introduction; definition and mapping of the current situation in the dairy goat and sheep industries, locating producers and manufacturers and tabulating production, imports and exports by product type; and scrutiny of latest market survey data as collected by Dairy Australia.

Consultation then occurred with previous researchers, producers and manufacturers throughout Australia, industry bodies such as Australian Special Cheese Association, and interested government agencies about industry potential and methods of obtaining the project objectives.

During regional visits, producers and manufacturers were encouraged to liaise, discuss and implement farming practices attuned to market needs. These included aspects of breeding patterns, herd improvement systems, feeding regimes and animal husbandry important to cost and quality of production.

Sample market surveys, involving consumers, retailers, distributors and manufacturers, and focussing on selected urban areas, were conducted during the project, specifically related to goat and sheep milk product demand, preferences and knowledge.

The technical dairy goat farm management manual developed in Project PTP-11A was updated and a separate manual was produced to cater for dairy sheep farming following consultation with producers and others during regional visits.

It was also intended to complete the prototype computer program for dairy goat farm management, initially started in Project PTP-11A, and adapt the program for dairy sheep farms.

A study tour to New Zealand was made to examine the current state of the dairy goat and sheep industries in that country in comparison with Australia, a similar exercise to that conducted in 1998 on the dairy goat industry.

Progress reports were produced for RIRDC and for circulation through the industries.

4. Results & Discussion

Review of Previous R & D

Key points to emerge from previous research and development projects relevant to the objective are:

Dairy Goats

- Pasture improvement and grazing, with application of suitable parasite control measures, have been shown to be conducive to more economical and viable production. Use of housing and bought in feed can be inefficient and sometimes counter-productive to the extent that industry profitability is affected.
- Farm surveys established benchmarks for farm and herd management and revealed considerable potential for productivity improvement and coordination of production with market demand
- Year round milking can be aided by use of hormone implants, lighting and controlled access to bucks with benefits accruing from a more regular supply of product to markets
- Great potential exists for genetic improvement in the national herd through industry breeding schemes and/or import of genetic material with resultant gains in productivity and product quality
- Domestic market demand for Australian goat cheese is increasing but more promotion is needed about cheese styles and potential uses. Export opportunities exist in Asia for goat milk powder, UHT milk and cheese
- Australian farming and manufacturing methods are generally equal to world standards.

Dairy Sheep

- Imported breeds such as Awassi and East Friesian appear best suited as dairy sheep and crossbreeding between the two, or with English breeds, is recommended for greatest productivity. Unfortunately the availability of the Awassi breed is very restrictive in Australia. Similar potential for genetic improvement exists as for dairy goats
- Most farms now process their own milk and have breeding and feeding programs to lessen fluctuations in production through the year
- Milk production is generally highest from housed sheep but this entails extra building, feeding and management costs
- Yoghurt is the main milk product which is sold to specialty markets. A range of cheese styles, based on traditional European types, has been developed and marketed with success. Export potential is good however the domestic market absorbs nearly all production at present
- Lamb production may be a valuable by-product with a ready market dependent on milk and feed prices.

Current Industry Situation

Dairy Goats

- There are about 65 commercial dairy goat farms, carrying close to 12,000 goats, and 15 factories processing goat milk in Australia. Nearly one third of the goat farms process their own milk but range considerably in size from farmhouse operations to relatively large processors. A combined farm and processing facility in Victoria handles both goat and sheep milk and is a significant component of both industries. Most of the farms are in Victoria, followed by New South Wales and Queensland, however production is highest in Queensland and Victoria, followed by Tasmania and South Australia.
- Despite some forecasts, there has been little shift of dairy cow farmers into dairy goats following de-regulation of the dairy cow industry. Of the current commercial producers, less than ten were previously involved with dairy cows.
- Total production of milk is now about 6 million litres per annum of which around 60% goes into cheese production, 35% sold as whole milk, and the balance increasingly to powder

- Victoria accounts for 30% of production, the bulk of which is made into cheese however a recently established operation is aiming to increase powder production. Queensland produces about 25% of the total, nearly all of which is sold as whole milk through a major milk company. Tasmanian production is about 15%, mostly for cheese, whilst South Australia, New South Wales and Western Australia produce about 15%, 10% and 5% respectively of the total. Usage varies between these States with whole milk the main product in New South Wales followed by cheese and a little yoghurt whereas in South and Western Australia cheese is the main product followed by milk and then yoghurt. Cheese and milk in particular are traded interstate
- Unpasteurised whole milk and milk products were a significant proportion of the local market in New South Wales but are now on the decline due to stricter regulations. A little occurs in Queensland and Western Australia, all strictly controlled by health authorities. Introduction of ANZ Food Standards will probably spell the end of this small portion of the market.

Dairy Sheep

- Eight commercial dairy sheep farms, carrying an estimated 4000 sheep, currently produce on a regular basis, two each in South Australia, Tasmania and Western Australia, and one each in Victoria and Queensland. There have been other producers recently in Victoria who may resume and a potentially large producer intending to start in Western Australia. All but one producer also process their own product, more than half the output being yoghurt and the balance made into cheese
- Total production is estimated at about 500,000 litres per annum, about 40% of which is in Victoria. South Australia and Tasmania produce most of the balance.

The following map gives a broad picture of the spread of the main commercial producers in Australia.



Market Statistics

Dairy Goats

- The Australian dairy goat industry has benefited mainly from continuing increased interest in specialty cheese production. About 3.6 million litres currently goes into cheese production with a retail value of \$22,000,000. About 2.2 million litres goes to the whole milk sector with a retail value of about \$7,000,000. These products are increasingly becoming available in supermarket chains as well as in specialty food outlets and they are widely used in the hospitality industry. There is also yoghurt production in several areas
- There is a history of goat cheese imports from Europe, notably France (chevre) and Greece and nearby Baltic countries (fetta and other traditional varieties). UHT and goats milk powder is largely imported from NZ. This is used for infant formula, health tablets especially for the Asian market here and overseas, and in other manufacturing
- Latest available statistics show cheese imports, classified as made wholly from goat milk, totalling 150 tonnes with a value of \$2,000,000. These figures do not include imports of fetta some of which would be from goat milk
- Australian cheese is increasingly being exported and latest data indicates total exports of 13.5 tonnes per annum. Asia, and more recently America, are known destinations.
- Appendix 1 gives a picture of recent estimates of use of goat's milk for cheese in Victoria.

The following table gives a comparison of trends in supermarket sales of goat milk and cheese showing good growth in recent years and a clear preference for Australian goat cheese.

Goats milk supermarket sales litres	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
NSW	379,500	406,000	500,300	599,700	586,600
Victoria	119,400	146,100	197,800	275,000	314,700
Queensland	432,200	526,900	570,200	584,700	557,400
South Australia	20,600	22,700	30,300	51,700	69,200
Western Australia	89,800	106,000	134,700	115,400	87,000
Tasmania	3,600	4,700	5,800	4,700	8,000
TOTAL	1,045,100	1,212,400	1,439,100	1,591,200	1,622,900

Goats cheese supermarket sales tonnes	2001-2002	2002-2003	2003-2004		2004-2005		2005-2006	
			Imports		Imports		Imports	
NSW	15.3	15.8	20.3	0	23.6	2.3	28.1	0
Victoria	7.6	11.7	9.7	3.5	11.2	2.7	13.2	2.4
Queensland	7.8	7.4	11	1.2	12.1	1	12.2	2.6
South Australia	1.8	2.2	4.1	0.1	4.7	0.1	4.7	0.3
Western Australia	2.7	1.8	4.1	0	6.2	0.1	6.6	1.2
Tasmania	0.7	0.4	0.7	0	0.8	0	1	0
TOTAL	35.9	39.3	49.9	4.8	58.6	6.2	65.8	6.5

Dairy Sheep

- Of the estimated 500,000 litres of milk produced per annum, about 300,000 litres is used for yoghurt with a retail value of \$2,400,000 and the balance made into cheese with a total value of \$1,400,000
- Product is mostly available in specialty food outlets or from on farm sales
- Sheep cheese is imported from France and the Baltic area (fetta and other traditional varieties).

Market Surveys

Summary

A point of sale, retail survey was conducted in late summer, 2006, in Melbourne, Sydney, Brisbane and Perth specialty food stores by both researchers in conjunction with local correspondents using a standard questionnaire. This survey was followed up early in 2007 to check if any significant changes had occurred.

Results were very encouraging for Australian stakeholders in that local products were more than holding their own with imported alternatives, even at a slightly higher price. Display and presentation of Australian cheeses, milk and yoghurt was generally very attractive to consumers. The range of Australian goat cheese available is quite extensive, much more so than sheep cheese.

Goat milk and sheep yoghurt, although representing only a fraction of the cheese market, are in steady demand. Organic/biodynamic product sales were reported as slow or small by all retailers questioned.

Details of the 2006 survey are shown in Appendix 2.

Cheese

Some users, particularly food service outlets, will choose quality and price is incidental. Most product is sold pre-packaged. Some cheese may be packaged by the retailer and a little is cut and sliced at point of sale. Latest information indicates that the demand for slicing cheeses is increasing.

Prices

Supermarkets tend to stock a particular French chevre and also a local equivalent. Although the import is slightly cheaper, it sells less well than the local. Reason for this is unclear.

Usual prices are goat \$20-\$90 and sheep \$30-\$79 per kg with not much variation between states. The fresher styles such as feta and chevre are at the lower end of the range. Some more mature cheeses, eg, Roquefort, are as high as \$140 per kg. The cheaper styles can be as low as \$10 per kg but it is unclear which milk is used. Some imports have a label saying it may be either cow, goat or sheep. It is doubtful if the cheaper cheeses are goat or sheep although they may claim to be one of these. In parts of Europe it is traditionally acceptable to use different milks according to availability. In other areas and/or types of cheese this is considered unacceptable.

Some Australian producers set a price across the board for all their types rather than try to calculate costs for various types.

Imports

Impressions are that most imports are sourced from Greece and Balkan countries, France, Spain, the Netherlands, and Italy in that order. The Netherlands supplies a relatively cheap slicing cheese that is often found at more down market outlets for apparently various ethnic populations but cheaper styles such as, this and various fetas, are found across the range of outlets more than was the case in 2000.

Most retailers did not know that Roquefort is a sheep cheese and certainly did not know it is a highly specialized raw milk cheese.

Generally, there is goat product available much more widely than sheep and it is now commonly found in supermarkets and cafes in many urban and suburban locations.

Local brands

Most common are South Cape, Meredith, Milawa across the country, and for sheep cheese Island Pure and Meredith. There are some small local cheesemakers who only sell locally but generally the same brands are found everywhere..

Milk

In NSW fresh milk appears to sell in larger quantities than in Victoria. Price is around \$4.45 per litre in NSW and, in Vic around \$3.30.

Yoghurt

Limited sheep and goat yoghurt is sold, most prevalent is Meredith sheep yoghurt. Price is about \$10 per kg.

Comments were that goat yoghurt is unpalatable. A NSW maker has good sales and a palatable product which is sold largely to an ethnic market.

Other

One outlet had goat powder and also infant formula. Pharmacies generally stated that infant formula is available but not generally stocked.

Goat tablets were not found but this may be because the specific outlets were not canvassed. These are said to be popular in the Chinese community and are considered medicinal or homeopathic.



Herringbone dairy for sheep

Farming Practices

Breeding

Dairy Goats

- Many farms express interest in one or more specific breed but over time this tends to lessen as production is evaluated or the need for more stock arises. Any Swiss goat breed or cross is likely to be acceptable, and as white is dominant, herds often appear to be predominantly Saanen.
- Most goat farms persist with seasonal breeding. Most feel that the technical difficulties and costs of out of season breeding (hormones, lights manipulation) are not justified by the results in successful pregnancies or price for milk. Also the labour involved in managing separate lactating herds and batches of kids is a disincentive. Suggestions that farmers agree to different times of mating have not been trialed
- Herd Improvement: One well established goat farm is recording milk volume, solids and somatic cell counts using a dairy cow system, and selecting from amongst their own stock on this basis. It is partly a culling tool, and also selects dams for retaining replacements of does and bucks

- Artificial breeding has technical problems with % of pregnancies lower than natural mating. Also there is no proven semen to justify the extra cost and labour input. There is interest in importation of overseas genetics as semen or embryos, and this would likely to be French material, France being the only country with proven sires. Quarantine protocols are a problem

Dairy Sheep

- Awassi and East Friesian are the dairy sheep breeds available, but not readily, in Australia. Other prime lamb breeds are also used, and crosses of these
- The predominance of sheep with short lactations, remains a problem. Dairy breeds of sheep have longer lactations and some farmers are keen to include these breeds. One established farm however has achieved equally successful results by crossing these breeds with local breeds, and selecting on performance
- Sheep flocks are usually mated at intervals through the year if year round or nearly year round supply is required. Two or three separate flocks are often run for this purpose. Seasonality is less of a problem with the usual sheep stock used, than with dairy goats. Some farms accept short lactations with one flock only
- One long standing sheep dairy farm is selecting on length of lactation and has achieved good results in overall production. This farm has very mixed genetics and has limited interest in any particular breed. Milk solids are not routinely monitored but cheese yield is known
- Artificial breeding as with goats, is less successful than natural mating. There is no proven semen but some farmers are keen to use from dairy breeds of sheep. Semen from recognized dairy breeds is not widely available and the genetic base is limited. There is considerable interest in importing genetic material but quarantine issues make this difficult

Nutrition

General

- Most farms use some pasture but the degree of management of this is very variable, some is simply rangeland, much is set stocking and some is highly managed rotational grazing. Some is unimproved or even unfertilised pasture, some have a range of permanent and annual species for targeted purposes. Many farms are not in the most productive country
- Hay and grains are commonly used, also silage in some cases. Feed analysis is not often done on purchased or farm grown feed. Minerals and other additives are often fed, sometimes with an identified need, sometimes according to perceived response.

Dairy Goats

- Some farms use a combination of shedding and access to pasture. This has been the tradition in Australian dairy goat management and is a limiting factor in productivity. Grazing in this way does not effectively use or manage pasture. Poor shed design is common and leads to high labour inputs, and hygiene and animal health often suffer
- Kids do poorly if given access to pasture or yards especially in the preweaning period
- Several larger goat herds are intensively housed, which is the usual practice in developed dairy goat and sheep enterprises overseas. With good design these are effective high producing farms, but the economics are likely to be similar to intensively housed dairy cows, ie., production higher but offset by costs. As long as goat dairies are not price sensitive this may be a viable option, at least in particular circumstances where feed is grown on-farm. Housing pre-empts parasite problems which are often a concern in grazed goats.



Shed feeding of goats

Dairy Sheep

- As with goat kids, lambs tend to do poorly if given access to pasture or yards in the pre weaning period
- There is less interest in housing sheep than goats but some are considering housing. As for goats the success of this practice will depend on costs and returns, and how well set up and managed the facility is.

Health

Dairy Goats

- Veterinary information and interest is often lacking for goats
- Goats in particular are vulnerable to health problems which have not been able to be effectively identified or managed in some cases. Comment from experienced farmers is that farmer observation and intervention needs to be very finely tuned when compared to other species
- Metabolic problems tend to increase with intensive management (shedding) according to European information. In pasture fed stock, parasites are a major issue for goats in particular. This is important not only because of problems of worm resistance to drenches, which can build up rapidly, but also because of residues in milk (see Problems section). Monitoring of parasites is often not routinely done, nor is drench effectiveness evaluated. Veterinary advice for use of drenches is sometimes contradictory, eg, give a different one each time, stick with one, mix them!
- It is theoretically possible to rapidly increase dairy goat numbers, given the usual twinning rate in dairy goats, however, losses in young kids sometimes very high. The reasons for this are not well documented but are probably related to feeding.



Feeding goat kids

- There are several chronic diseases that have an impact on productivity. BJD affects goats, but OJD has only been identified in goats with very close contact with OJD affected stock. Wasting and ill thrift for any reason will obviously impact on lactation. CAE can have a large impact on goat productivity
- Goats are vulnerable to udder complaints, eg, mastitis, which tend to increase with higher production
- Foot problems are issues in both species especially when stock are run on productive (ie damp) country.

Dairy Sheep

- Sheep do not have the same extent of health issues at present, but as milk production increases sheep may become more vulnerable
- Udder complaints such as mastitis are likely to become more of an issue with increased production
- Losses of lambs can be very high, and appear to be partly related to feeding regimes
- OJD could have an impact on dairy sheep in particular, given that milking sheep are much more intensively managed than most sheep flocks; they are yarded together twice a day for milking, to begin with. Sheep do not appear to be vulnerable to BJD. Wasting and ill thrift for any reason will obviously impact on lactation
- Foot problems are issues especially when stock are run on productive (ie damp) country
- Drenches are licenced for use in sheep for meat production, but not milk production, and resistance can occur.

Marketing Practices

- The range of marketing practices is from one end of the spectrum to the other, due in part to the enormous range in size of enterprises which often reflects the attitude of producers to their business, be it a modest farm shop operation or a vertically integrated business from farm to market
- Marketing procedures and channels are also influenced by the market sector being targeted, which includes organic products, and the outlets such as farm shops, farmers markets, health food stores, specialty food delicatessens, food service businesses and supermarkets.
- Individual producers either do their own processing, marketing and distribution, engage distributors or have arrangements with retailers, or a combination of all these approaches. There is a mix of price setters and price takers.

Problems

Information

General

- There is a general lack of targeted, tested information in most areas. Producers are forced to extrapolate from dairy cattle or overseas information that may not be particularly appropriate for multiple reasons; economic (supported systems), climate, market characteristics etc. It would be very helpful to have a dedicated source to monitor and disseminate new/current information to the nonbovine sectors
- Distance and time constraints also limit information sharing between producers
- Most nonbovine milk producers also have no access to the extension support provided by large dairy companies and are entirely reliant on input from government/regulatory bodies for support and information. It can be difficult for small sectors to readily access this support especially as local field staff are reduced.

Costs

Dairy Goats

- Many enterprises are too small to be stand-alone viable. Producers do not always have realistic information/expectations. For example a 50 head goat herd with on-farm value-adding eg cheesemaking is unlikely to provide \$50,000 income annually. Most farms need additional income from outside or multiple on-farm activity
- In several cases initial estimates of cost of production for goats have had to be revised. Reasons for this appear to include over optimistic expectations of herd average production based on individual yields, genetic improvement, and also high stock losses. It is not clear whether the latter is a management or veterinary (disease) issue, but is likely to be a combination
- Troughs in production may make delivery of milk over distances, unviable for farmers who deliver their own milk.
- Consultation between farmers and processors is essential and some goat enterprises have sophisticated seasonal payment which is reassessed annually.

Dairy Sheep

- There is less specific information available on costs for sheep but the information above for goats are likely to apply.

Management Issues

General

- Flocks and herds are often located in areas that are less productive than established cow dairying areas
- The workload is heavy for the return; 7 day week maybe year round and difficulties finding relief labour
- Flocks/herds are often milked in rotation with perhaps 3 separate flocks/herds, to provide year round milk. In sheep this is because of short lactations, in goats simply to even out production
- Milk supply issues: seasonality of breeding peaks and troughs that cause problems with processing and markets, but may be acceptable to the farmer. Seasonal production makes flock/herd management easier and provides time off
- Out of season breeding has technical problems as well as management/workload problems
- There are health issues (viability) especially of kids and lambs, but also does
- Generally animal health knowledge is poor and interest from veterinarians may be low
- Distance from markets can be an issue especially for smaller producers whose relative costs are high due to lower volumes

- Quality stock is hard to come by. Farmers need to have ways of selecting the best stock in their own flock/herd at least (milk recording) as a first step towards a developed industry wide genetic improvement systems
- Milk quality issues are only partially addressed. Food and health requirements are monitored usually by the State dairy authority, but other issues such as somatic cell counts are not. Somatic Cell Count (SCC) is important in manufacturing milk, in particular with cheese yields lower if SCC is high but no benchmarks are given to producers.

Dairy Goats

- Milk residue issues: few veterinary preparations are registered for use in goats, eg parasite drenches. There have not been any investigations with regard to milk residues in Australia although there is some in overseas literature. Regardless of this literature, the fact that veterinary products are not registered for use in goats means that these products are only allowed 'off label' use, ie prescribed by veterinarians, and they are understandably cautious in giving advice in this regard. Overseas dairy goats are usually lot fed, so parasite management is not the issue that it is in Australia where most are at least partly paddock fed. This is of economic importance to Australia, so drench issues are of particular concern here.

Dairy Sheep

- Veterinary products may be registered for use in sheep but the applicability of this to milk residues is unclear.



Australian dairy sheep

Regulatory

Dairy Goats

- NSW goat milk production has decreased after recent regulatory changes, particularly with small farms that supplied whole milk
- OJD regulation has had an impact on dairy goats in NSW.

Marketing

Dairy Goats

- There are difficulties in placing small quantities of product
- There is a need to quantify the amount of product that is likely to be sold at prospective outlets. Buyers may not know this themselves and are often unduly optimistic at least in the short term
- With small scale production the ability to absorb losses is limited and 'sale or return' is not accepted. This can lead to a situation where supply is deliberately curtailed at retail level, only individual orders are supplied and there is no opportunity for casual purchase
- Lack of year round supply is a constraint identified by processors and distributors
- Volume sold in supermarkets has great potential if the return is adequate. Higher volumes than generally available are needed for supermarket outlets
- There is a lack of a cost effective market for buck and other unwanted kids.

Dairy Sheep

- There are fewer sheep enterprises and turnover of farms has been higher than for goats
- Labour requirements are high compared with usual sheep production in this country
- Production is limited by lack of suitable available genetics related to, for example, volumes of milk, lactation length, milk characteristics such as late lactation milk, and milk letdown
- Milk supply issues: lactation length. How much does it add to the cost of production to have to run 3 flocks each in production for short periods?
- Loss of lamb income in some cases; need to trade off milk versus lambs.

Opportunities

Dairy Goats

- Growing industry but past the very early unpredictable stage. Part of a developed world interest in specialty and 'healthy' food
- Unmet demand for milk (liquid and manufacturing) over many years
- Chance for farmers especially dairy farmers looking to diversify or change
- Plant available secondhand from dairy farms
- Information from the dairy sector is helpful although it has been noted by several that goats are much more difficult in their management than cows
- "Sea Change"- lifestyle opportunities
- For innovative enterprises; gourmet products, regional partnerships in this, links to tourist type ventures, parallel activities eg café/restaurant, cheesemaking classes, farmstay. Develop 1:1 relationships in marketing eg farmers markets; lifestyle choice.

Dairy Sheep

- As for dairy goats but the industry is smaller and less developed than goats
- Prices for milk/prices for lambs are able to be traded off season by season.



Farm shop

New Zealand Situation

A two week visit to New Zealand by the Principal Investigators occurred in November, 2006. The purpose of the visit was to examine the current state of the dairy goat and sheep industries in that country in comparison with Australia, a similar exercise to that conducted in 1998 on the dairy goat industry.

Interviews were conducted with 15 farmers, processors and industry stakeholders in both Islands.

Dairy Goat Industry

Background & Current Position

A commercial dairy goat industry had its beginnings in the 1970's in Northland and was encouraged by the government with the establishment of a research station. Eight co-operatives were formed to produce a range of products including powder, cheese, icecream and butter. Ultimately supply far outreached demand and a recession occurred in the early 1980's. The eight co-operatives joined into one and a gradual recovery occurred in the late 1980's to early 1990's.

By the late 1990's the industry had stabilised, dominated by the NZ Dairy Goat Co-operative with about 60 suppliers producing powder for the export market, plus three other main processors with about 20 suppliers producing cheese for domestic and export markets. Production was an estimated 6 million litres of goat milk per annum.

In 2006 the dairy goat industry appears to have grown to more than double the size it was in the late 1990's with only a moderate increase in number of farms but a considerable increase in average herd size. The increase appears to be mainly due to expansion of activity by the Dairy Goat Co-op., based on milk powder production which is still the major product, and nearly all of which is exported to Asia and some to Europe. This organisation is a success story which would not have been possible without the export initiative, supported by the government and assisted initially by a large dairy factory. The product is marketed as a NZ premium item, well presented and packaged, promoting health benefits and quality issues and specifically aimed at infant and toddler nutrition. Other processors include several small factories and farmhouse operators producing cheese for the domestic market with aims of exporting, particularly to Australian and American markets.

Total production is now estimated at about 15 million litres per annum, more than 80% being handled by the Co-op. Estimated farms are now around 90 and total goat numbers about 27,000, concentrated in the North Island and the Waikato area in particular. The Co-op. provides a stable outlet for milk. Farmers operating outside the Co-op. have recurrent supply and demand problems and uncertainties, even after decades of operation. Some former outlets, especially for cheese, have undergone re-structuring following extensive takeovers in the broader New Zealand dairy industry. Some farms outside the Co-op. have lost outlets as a result.

Reported milk prices paid to farmers range from \$9 to \$14 per kilogram total solids (\$1 to \$1.50 per litre), the Dairy Goat Co-op. paying the highest. Buying shares in the Co-op. is said to cost at least \$20 per kilogram solids supplied. Most product sold on the domestic market, which includes a range of cheese styles, yoghurt and some goat milk, goes through supermarkets with specialty food shops and farmers markets taking the balance.

Quality control is strict, particularly by the Co-op. for the production and export of infant milk powder formula. Government food and health safety departments have stringent guidelines for milk processors and conduct regular audits. Assistance from Government appears to be minimal, in marked contrast to a decade or two earlier. Many of the people contacted envied the support the dairy goat industry receives in Australia from the Rural Industries Research & Development Corporation. The Australian Specialist Cheesemakers' Association was considered by some as a good model for New Zealand to follow.

Herd Management

Dairy goat herds are nearly all housed and fed green chop plus various other feed additives. This system, which has developed since the 1980's when all herds were grazed, has been found necessary to combat escalating worm problems, tighter restrictions on withholding times after drenching, and production decline in cool, wet weather. Concern about the demands of the organic market regarding use of chemicals also encouraged housing. It also suits the general belief that dairy goats cannot handle inclement weather. Although capital and labour intensive, the system is viable under current industry economics where demand and milk price are relatively high. One farmer changed to housed goats after many years of grazing improved pasture, following a series of very wet summers and soaring worm problems. Mooted animal welfare legislation, requiring minimum space per animal, will however increase housing costs.

One enterprising farmer encountered is going against the norm by grazing goats and deliberately selecting within herd for worm resilience or resistance. The herd is also exposed to the elements without undue adverse effect for the last 10 years. This approach was considered consistent with increasing consumer demand for pure and natural, chemical free primary products, apart from being a lower cost method of production.



New Zealand dairy goats

Saanens make up the vast bulk of herd composition. Other Swiss breeds are a minority in New Zealand. Milking is generally seasonal, from late winter/early spring through to the autumn, in either herringbone or elevated rotary sheds. Yield averages per doe of 900 litres per annum are reported although an industry average of about 600 litres per annum is more likely.

Herd testing is common and sophisticated record analysis is provided by the NZ Livestock Improvement Corporation. However there was no evidence of specialist dairy goat herd management computer programs being available. Some AI is used and fresh semen is now becoming available and expected to give better conception rates. Selection is usually based on yield of Total Solids, the main payment criterion, plus udders, feet, age and similar workability criteria. Estimated Breeding Values are being developed by Massey University for the Co-op.

Kids are usually weaned off milk/replacer feeding between 6-12 weeks with a target weight of about 15 kilograms, and growth rates appeared good to very good. Does are usually joined to kid at around 15 months. There is some use of melatonin pellets injected into the ear to bring does into season in January.

Herd health issues vary according to management systems. Pasture fed herds had worm problems, as also did herds that were heavily supplemented with some pasture access. Housed herds were more

likely to experience listeria, staggers and milk fever but not worms. It was reported that it took at least a year of zero grazing to rid a herd of worms and see the benefits from higher production.

Foot problems can occur in both systems, and high Somatic Cell Count (SCC) also. The preventative treatment for mastitis, Orbenin Dry Cow (benzathine salt of cloxacillin) has been found to persist in the udder for up to 74 days; this has been reported in Australia also. CAE and JD were probably present to the same degree in both system and are 'lived with'.

Faecal egg counts are commonly used to assess the need for drenching for worms. Timing of the latter must be done to comply with effective withholding periods which are not specified by manufacturers and appear to be subjective. Drenches used include mixtures of levamisole and oxfendazole.

Regulatory bodies are MAF, NZDFSA, AgQuality, the latter body supervising risk management programs. Regulation requirements can cost \$10,000 annually. Regulation is geared to Australian market requirements. QA includes monitoring for e.coli, listeria and others by plate count, and also SCC and antibiotic residues. A SCC limit of 1 million is the standard required by the Co-op. Concern about residue issues is quite high. Some will not use certain (imported) feeds because of anxiety about this, and housed animals which do not need worm drenching have an advantage. Exporters to the USA are very aware of the organic demands of their market.

Export and quarantine facilities for live goats, which were a lucrative income source for some farmers in the late 1990's, are now hardly used due to a downturn in demand for disease free goats from overseas countries.

Dairy Sheep Industry

Background & Current Position

Sheep dairying in New Zealand began to gain considerable interest in the South Island in the 1980's due to a fall in returns from the traditional products of prime lambs and wool. This industry was also supported by the government through research and development efforts, notably at Flock House. Many sheep farmers made attempts at milking sheep but most were short lived due to capital and labour costs, low production from conventional breeds and marketing problems.

The industry received a boost in the 1990's with the import of dairy sheep genetics from Europe and the Middle East, particularly from the East Friesian, Awassi and Persian breeds. The East Friesian genes, although from a small population in Sweden, have had the most influence giving higher yields and longer lactations, either as purebreds or when crossed with the prime lamb breeds, usually of British origin.

The dairy sheep industry despite the optimism of the late 90's has since had a fluctuating history of farmers coming and going due mainly to management and marketing problems. It is currently similar in size to that in Australia with less than 10 farms, about 6,000 sheep being milked, and producing up to 900,000 litres. Flock sizes ranged from 130 to 3,000 sheep. The industry is still predominantly in the South Island.

Some industry personnel have travelled widely and studied sheep production in other countries, particularly in Europe. Production can be high there but there is a lot of government support to what is often a peasant type industry. Roquefort cheese has not been allowed into NZ and it is felt that this will not change although the regulations are supposed to be ANZ. There would be reluctance to make a similar high moisture cheese from raw milk even if this were allowed in NZ as it is felt to be too risky for human health. Comments were made that production methods in Europe are much less controlled than here and also that introduced culture is used in some European cheeses, contrary to public perception.

Apart from one enterprise, production goes almost entirely to cheese which is sold primarily on the domestic market which limits expansion. Exporting, even to Australia, involves more marketing expense and other requirements. It was reported that although some cheese is sold to Australia, Melbourne appears to be a 'closed shop.' The industry may be about to change radically due to a venture that has started in Southland which could quadruple the total output within a few years. As with dairy goats, nearly all this expanded output will be exported, probably as powder.

Reported milk prices paid to farmers range from \$1.40 to \$2.20 per litre and a range of cheese styles, from fresh to hard, plus a little yoghurt are produced. Product outlets on the domestic market include supermarkets, specialty food shops and farmers markets. One outlet prices organic and other cheeses the same and has not seen any consumer preference.

Government food and health safety departments have stringent guidelines for milk processors and conduct regular audits. This involves considerable expense (reported to be \$10,000 annually) and time which is a disproportionate burden on small scale operations.

Assistance from Government appears to be minimal, in marked contrast to a decade or two earlier and in contrast to the support the dairy sheep industry receives in Australia from the Rural Industries Research & Development Corporation. Sheep milk producers did not know much about each other and this was seen as a negative factor by some.

Flock Management

In contrast to goats, dairy sheep are grazed on pastures with little supplementary or bail feeding. This practice is more effective in the South Island with its dry summers and cold winters which keep potential worm problems under control although routine checking via fecal egg counts are common. Experienced operators note that sheep need very good pasture to produce about 1litre per day. One farmer uses dairy ewes to graze under his extensive kiwi fruit vines to keep grass down and provide an extra income stream.



East Friesian dairy sheep in New Zealand

The breed composition of dairy sheep flocks is usually a combination of East Friesian with Dorset and/or Border Leicester. The East Friesian component, while valued for its milking genes, is generally not allowed to become too dominant because of reported susceptibility to poor weather. The Lacaune breed from France with its history of genetic improvement would be a preferred import but is unavailable for biosecurity reasons.

Milking, usually in herringbone sheds, is seasonal over the spring to autumn months with lactations of 150 to 250 days reported. Average yields appear to be in the region of 150 to 200 litres per ewe per annum although an overall industry average of 150 litres per ewe per annum is probably closer to the mark. Once a day milking is sometimes practised with reported production loss of about 25%.

Herd testing is not common, except in the larger flocks. One large flock has pioneered an electronic milk volume and milking time monitoring system based on electronic ear tags and transponders at milking stations. Selection is usually based on yield of Total Solids, SCC, feet, lactation length and body size. SCC levels appear to receive more attention than with dairy goats and were said to be important for shelf life of the fresher cheeses. SCC's of 300,000 were common.

Some farmers leave lambs on ewes for the first 3-4 weeks after birth then share milk for another few weeks whereas others remove the lambs within a day. The former practice gives easier lamb rearing but comes at the cost of foregone milk production at the peak of lactation. Some farmers noted that this practice easily gives rise to udder problems as ewes need to be milked out early. It was suggested that business plans may include lamb production, that farmers had problems hand rearing lambs, and that the regulator may have some input (animal welfare?). One farmer sold newborn lambs to a local dairyfarmer to raise, and sourced his flock replacements from him.

Main health issues include lungworm, bloat, footrot, footscald and abscesses, pneumonia and mastitis.

Farm Management Manuals

Two separate manuals have been produced as individual publications, supplementary to this report. They are entitled "Dairy Goat Manual – Farm Management Guidelines" and "Dairy Sheep Manual – Farm Management Guidelines" (RIRDC Publication Copies are obtainable from RIRDC.

Farm Management Computer Program

An attempt was made to complete a prototype farm management computer program, begun in the previous project, and produce versions both for dairy goat and dairy sheep farms. Despite considerable encouragement to a tertiary institution to finish this component of the project the work stalled and the contract had to be terminated.

Enquiries were made in New Zealand about the existence of specialised farm management computer programs for dairy goats and sheep without success.

5. Implications & Recommendations

- Both the dairy goat and dairy sheep industry in Australia are in a generally healthy state, growing steadily and with considerable apparent potential for current participants and for newcomers. As with any relatively small industry however, growth rate must be prudently managed to avoid the boom and bust cycle that can so easily occur.
- The importance of experience and expertise in either dairy goat or dairy sheep farming cannot be overestimated.
- Critical mass of the industry is important and is needed for stability. Size is important for the sheer volume needed for effective marketing to satisfy (hopefully) a developing market demand for product, for economies of production runs, and also for the cushioning effect of being able to plan production according to supply to a greater extent.
- Smaller farms may have difficulties in supply and have less ability to economically manage farms and deliver milk. Many costs are the same for large and small quantities of production and the trend for fewer but larger farms appears to confirm this. Some herds are now milking more than 1000 does or sheep.
- Some synchronicity of development is beneficial to an industry. The early New Zealand goat co-ops. had problems when supply of milk outstripped demand. In Australia, cheesemakers and farms have kept pace to a greater extent with much less pain to both.
- Location of the industry in suitable dairy type country which has dairy industry knowledge and facilities would be helpful. This is not so apparent in sheep dairying at this point.
- Co-operation within the sector/s is likely to occur for pragmatic reasons. Milk in New Zealand is traded across organisation boundaries according to the need.
- Very large integrated enterprises may be able to manage milk production, processing and marketing in-house.
- In the absence of such enterprises, a high degree of industry co-operation/structure may be needed. In New Zealand the Dairy Goat Co-op., which deals in long life products, fills this role. In Australia, where farms tend to each have their own single outlet, the potential for industry co-operation at farm level is less convincing at this stage of industry development. The development of long life products with centralised processing could change this with more immediate common interest on the part of farmers.
- Dairy goat breed societies in both countries offer some opportunities for contacts with others, both in and out of the commercial sector, and overseas.
- For processors, industry co-ordination may offer Australia advantages in marketing co-operation and branding as the wine industry has shown. The Australian Specialist Cheesemaker' Association has been important in product promotion and lobbying.
- Zero grazing and housing of dairy goats may provide a positive benefit and cost ratio as long as price sensitivities allow.
- Breeding, feeding and management of dairy sheep appears to be satisfactory and is generally similar to New Zealand practices.
- In both countries there appears to be little contact between dairy sheep farmers, which may be due to industry structure and lack of a shared outlet, and therefore the absence of a co-op.

Appendix 1

Estimates of Goat's Milk Usage for Cheese in Victoria – 2004/5 to 2006/7

Estimates at February, 2007

	2004 - 2005	2005 – 2006	2006-2007
Predicted usage (ℓ)	1,151,700- 1,423,200	1,210,305-1,400,705+	1,384,355-1,583,700
Actual (ℓ)	1,058,872	1,386,410 +	

Respondents

10 cheesemakers (out of 11 contacted).
There are several new cheesemakers.
40% of cheesemakers used 90% of the milk.
5 use other species milk as well.
4 use only own milk.

Expectations

1. Quantity

- 4 expect or would like higher use next season
- 1 expects lower use
- 2 expect same use
- 2 could go either way

There is no report of powder used to provide enough cheese this season.

2. Pattern of use

April – August supply is often lower. However this was mentioned less this year. Some mentioned that extra milk is available if needed.

3. Comments

Supply has increased due to new supplies of milk.
Extra security of available extra supplies.
Looking at value adding and deleting low margin customers.
Have changed focus, happy with this.
Harder cheese, milder flavours due to customer demand.
Demand for cheese and other products is felt to be high, especially in the USA.

4 Limiting factors

- Markets/marketing.
- Factory space
- Size of farm
- Staff availability
- Seasonality of supply
- Milk price
- Summer feed
- Herd still growing
- Specialist feed availability

Appendix 2

Market Survey Data – Summer, 2006

**Market Survey Summary
Goat Cheese**

City	Store/Type	Brands	Types	Packaging	Price \$	Comments
Perth	1. Deli	10 – 6 imp. (mainly Kervella, Kytren, South Cape, Soignon)	13 – full range	various	30-60/kg imp. 40-90/kg aust.	high demand and growing fast
	2. Deli	4 – all aust. (Kervella, Meredith, Woodside, Kytren)	9 – good range	various	40-60/kg	
Brisbane	1. Market	5 – 1 imp. (Milawa, Meredith, Woodside, Gympie)	mostly chevre, some feta	various, mostly 100-125gm	50-140/kg	high – low varies with type
	2. Deli	5 – 2 imp. (Meredith, Tarago River)	5	various	50-80/kg	high-medium
	3. Deli	6 – 2 imp. (Y Vally, Tas H'land, Meredith)	4	various	36-60/kg	high-medium
Sydney	1. S/market	4 – 3 imp. (Soignon, Elco, Dodoni, S Cape)	3 – mainly feta & chevre	various	30-60/kg	
	2. Deli	3 – all imp. (Dodoni, Caprakaas)	3 – feta to hard	wheels & various	15-33/kg	medium
	3. Market	6 – 3 imp. (S Cape, U Delights, Soignon, Caprakaas)	5 – fair range	various – mostly 100 to 200gm	30-50/kg imp. 30-80/kg aust.	medium - low
	4. S/market	5 – 3 imp (Soignon, S Cape)	mostly feta & chevre	small packs – 110-250gm	20-50/kg	low-medium
	5. Deli	4 – (Kervella, Meredith, Atiki, President)	feta & chevre	various	50-130/kg	high
Melbourne	1. Market	6 – 1 imp. (H Goat, M'dith, W'side, T River, Gymp., Soignon)	large range	various – mostly small packs	35-110/kg	strong across range
	2. Deli	13 – 3 imp. (Red Hill, M'dith, W'side, H Goat, Gymp., Indigo, U D'lights, , Milawa, T River)	complete range	various – most small packs and jars	??	high – medium, supply shortage for some lines
	3. Deli	8 – 7 imp. (Soignon, Caprakaas, Florette, Milawa)	chevres, blue and semi hard	various	30-80/kg	??
	4. S/market	2 (Soignon, S Cape)	chevre	110-150 cryo	50-60/kg	variable
	5. S/market	2 (Soignon, S Cape)	feta & chevre	110-150 cryo	40-60/kg	
	6. Deli	5 –all imp.	range	various	27-64/kg	steady
	7. H/food	1 - Meredith	feta & chevre	200-325gm	30-40/kg	very good

Sheep Cheese

City	Store/Type	Brands	Types	Packaging	Price \$	Comments
Perth	1. Deli	8 – 5 imp. (Thessonis, Saracino, Eureka, Manchego, Lemnos, Dodoni Meredith, Woodside.)	4 – feta, chevre (?) and pecorino	various - wedges and tubs	feta - 9-45/kg other - 30-47/kg	
	2. Deli	2 – Manchego, Meredith	2 – feta & hard	plastic wraps	feta - 50/kg hard – 60/kg	
Brisbane	1. Market	3 – (Papillon, Dodoni, Island Pure)	feta, haloumi & roquefort	various	feta – 30/kg r’fort – 95/kg	high mostly
	2. Deli	6 – all imp. (Osau, Righto, Romano, Cacciotta, ?, ?)	blue, semi hard & hard	wheels & plastic wraps	35-130/kg	high-medium
	3. Deli	3 – all imp. (Kefaograviera, Auricchio, R’fort)	blue, semi hard & hard	wheels & plastic wraps	30-80/kg	high-low
Sydney	1. S/market	3 – (Dodoni, Lemnos, Cosa Noir)	feta & r’fort	various	feta – 40/kg r’fort – 69/kg	
	2. Deli	5 – all imp. (Dodoni, M Polo, Lacrime, etc)	feta, blue and firm	wheels & various	feta - 18/kg other - ~20/kg	medium
	3. Market	1 – Dodoni	feta	plastic slab 200gm	25/kg	high
	4. S/market	1 – Dodoni	feta	plastic slab 200gm	25/kg	low
	5. Deli	4 – (Kasseri, Kefalogravia, Manchego, Dodoni)	feta & semi hard	wheels, etc	feta – 31//kg other – 37-79/kg	high low
Melbourne	1. Market	5 – 4 imp. (Kefi, Manchego, Italian, Papillon, Island Pure)	good range	wedges & cryo packs	feta - 29/kg r’fort – 65/kg	
	2. Deli	5 – 2 imp. (Meredith, Island Pure, MtEmu, Manchego, Papillon)	feta to r’fort	mostly 100gm wedges	??	
	3. Deli	8 – 7 imp. (Rochecone, Pepato, Romano, Millel, Italian, Bulgarian)	feta, pecorino, blue and semi hard	various	15-99/kg	??
	4. S/market	nil				
	5. S/market	R’fort		100gm wedge	70/kg	
	6. Deli	Pecorino, Roquefort, Saracino				
	7. H/food	Meredith	feta	200gm	37.50/kg	

Goat Yoghurt

City	Store/Type	Brands	Types	Packaging	Price \$	Comments
Brisbane	1. Market	2 – King Island (?), Alpine	natural, flavoured	plastic tubs	13-18/l	low
	2. Deli	out of stock				
	2. Deli	2 – Westhaven, Alpine	natural, flavoured	200gm-1kg bottles	??	
	7. H/food	1 - Alpine		200-500gm	11-12/l	ok, < cheese

Note: Goat yoghurt was not available in 13 stores

Goat Milk

City	Store/Type	Brands	Types	Packaging	Price \$	Comments
Brisbane	2. Deli	1 - Gidgegannup	fresh	bottle	4.45/l	high demand > supply
	1. Market	1 – King Island	natural, flavoured	200-400gm bottle	10-15/l ?	high
Sydney	1. S/market	1 - Pauls		1x l carton	3.35/l	69/week
	4. S/market	1 - Pauls		1x l bottle	3.31	low
	2. Deli	1 – Alpine		1x l carton	??	
	3. Deli	1 - Pauls		1x l carton	3.35	
	4. S/market	1 - Pauls		1x l carton	??	steady
	5. S/market	1 - Pauls		1x l carton	3.29	6-7/week
	7. H/food	2 – Alpine, Hulle	powder	400-500gm	50-75/kg	low

Note: Goat milk was not available in 8 stores

Sheep Yoghurt

City	Store/Type	Brands	Packaging	Price \$	Comments
Perth	1. Deli	Meredith, Island Pure	500gm jar or tub	10/kg	medium demand
	2. Deli	Meredith, Island Pure, River Valley	500gm jar or tub	11-20/kg	
Brisbane	1. Market	K Island (?)	500gm	14/kg	
Sydney	1. S/market	Lesna	500gm jar	11/kg	
	3. Market	Grampians	375gm jar	14/kg	low
Melbourne	1. Market	Meredith, K Island	500-1kg tubs	9-10/kg	
	2. Deli	Meredith, Grampians(also Shaw R buffalo)	3-500 gm jar or tub	??	
	7. H/food	Meredith	500gm-1kg	9-10/kg	best line

Note: Sheep yoghurt was not available in 9 stores

Farming and Marketing Goat and Sheep Milk Products

by A. K. Stubbs & G. L. Abud
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This report summarises the current status of the dairy goat and sheep industries in Australia. It includes a synopsis of present research knowledge relevant to farming practices and market opportunities, collection of information on contemporary farming methods and product demand, and production of farm business management manuals relevant to the two industries.

This report accompanies the Dairy Sheep (RIRDC Pub 08/205) and Dairy Goat (RIRDC Pub 08/206) Manuals. They provide up to date technical and economic information for current and prospective industry participants, and will assist the industries to grow sustainably and profitably in the future.

The report and the manuals are for the particular information of current and potential industry stakeholders, including producers, processors, marketers, researchers, industry organisations and government agencies.

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