

Elite lambs for meat production

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Introduction

The prime lamb industry has always been domestically oriented. Over the past decade about 10 - 20% of the annual production of 250 - 300 kt produced has been exported. More specifically, 41.4 kt of 274.4 kt was exported in 1992. The major states involved are Victoria (produced 111.5 kt, exporting 7% in 1992) and New South Wales (produced 89.2 kt, exporting 8.8% in 1992).

Like most agricultural industries in Australia, the lamb industry is facing a number of serious problems. Falling real prices and increasing costs to producers, processors and retailers have meant severe economic pressures leading to the loss of many operators. There has been a fall in the consumption of lamb over the past decade; initially the fall was arrested by lower prices which enabled the product to remain competitive on a price basis. However, the consumption of lamb per capita fell to 13 kg per annum in 1992, a loss of around 1.5kg. By comparison, over the 1980s per capita pork consumption increased, to 18 kg per annum in 1992.

In 1990 a new national lamb program was funded by the Meat Research Corporation (MRC). This is a cooperative program between many industry organisations, entrepreneurs and government which aims to address the issues of attempting to redirect the lamb industry with a modern approach to marketing providing consequent benefits to all participants. This paper describes the rationale for the program, the approaches being taken, the objectives and the current progress of the Prime Lamb Key Program, or by its more common name, the Elite Lamb Program.

Problems in the lamb industry

Without listing all the problems of the lamb industry, there are a number of critical obstacles to be overcome in terms of modern marketing principles.

Historically as with most other agricultural commodities, the lamb industry has been product-driven. Producers supply a live lamb that they somehow perceive as "good", this then finds its way through the marketing chain to the consumer. In the past there was little objective data to demonstrate whether or not the product was in strong demand or not.

Furthermore, over time lamb was rarely the primary interest for many growers, processors, retailers or consumers. Lamb is invariably integrated with some other activity, which is usually more highly regarded. On the farm, lamb is ancillary to cereals or wool. In retailing, despite having some very favourable meat quality characteristics (it is usually very tender, rarely is it tough, it rarely has dark colouration in the meat, and its fat is invariably quite white), lamb is seldom sold in Australia as a gourmet meat. It is generally displayed as a loss-leader product in supermarkets and as a result many consumers regard it as a cheap meat.

The product was not what the consumer required. Initially research by Thatcher and Couchman (6) showed that many Australians regarded it as too fat with insufficient lean. This was supported by Hopkins and Congram (4) who found consumers required some of the joints, e.g. the leg, to be larger. Ashton-Jones (1) reporting some Australian Meat and Livestock Corporation (AMLC) research suggested that lamb was also regarded as old-fashioned and lacking versatility. Whilst these findings were new for Australia, they were not unexpected as the trends towards leaner and more versatile meat had been reported overseas.

Structurally the lamb industry is not easy to change because of the number of value-adding activities (the marketing chain) which take place before it is eaten (Table 1). The merchandise traded prior to consumption is variously a live lamb, a carcass, primal joints, cuts and joints, and meals. Each step usually involves an industry sector adding value, but some steps provide only a service, for example, stock agents transfer the lamb from producer to processor.

The marketing chain creates a number of problems. In particular, price signals cannot be transferred easily from consumer back to producer so that the product in most demand is produced. Each sector has its own indicators of quality, but these relate to their own requirements rather than those of the consumer who ultimately eats the lamb.

All operatives are very competitive and often aggressive, and this leads to conflicts both within and between sectors. Market advantage is often gained by developing a mystique about the product on sale rather than any demonstrable and describable advantage, although ultimately the cheapest price (regardless of quality) will enable disposal of the product. It is difficult to be innovative because of the suspicions that someone else will gain the additional profits.

The perishability of meat enhances the price competitiveness because it must be disposed of quickly. In trading, agreements are short-term and generally revolve around price because some return is preferable to total loss due to spoilage. This prevents any long-term build up of trust based on product quality and suitability for specific markets.

Marketing principles require a described product, available upon request at any time of the year. Lamb cannot fulfil either of these premises.

The Prime Lamb Key Program is designed to overcome these problems and create a more modern lamb industry with some potential for long term viability.

Table 1 Chain for adding value to lamb products and transfers between operatives ^a

Site	Activity	Operative	Product and description
Farm	Grow	Farmer	Lambs (visual)
	Muster	Farmer	Lambs (mixed speci's)
	Transport	Operator	
Saleyard	Auction	Stock Agent	Lambs (pens)
	Transport	Operator	
Abattoir	Lairage	Processor	Lambs (mixed)
	Slaughter	Processor	(Carcass est. wt and fat)
	Chill	Processor	Single carcasses
	Distribute	Processor	
Boning Room	Break down	Wholesaler	Primals
	Transport	Wholesaler	
Retail outlet	Break down	Retailer	Cuts and joints
Restaurant	Cook	Chef	Meals
Household	Store	Consumer	Meals
	Cook	Consumer	

^aExtracted from Thatcher (1992), Report to Meat Research Corporation

Elite lamb program

The program specifies lambs of 22 kg or more with a fat score of 2 or 3, a GR (tissue depth 11 cm from the midline over the 12th rib) of 6 to 15 mm. Traditionally, lamb is about 16 to 18 kg, with a fat score of about 4 (GR 16-20 mm).

The aim of the Key Program is to produce 25,000 tonnes of value added lamb by mid 1994. This translates to about 100,000 lambs per month.

Three crucial aspects to the program are:

- development of a demand for the product, with the aim to create a consumer "pull" of the product through the marketing chain;
- development of the links between industry participants recognising the value of the program, and identifying the potential for profits to them;
- introduction of new production systems on farms. These systems must attempt to provide a continuous supply through-out the year.

In addition to government support, the major source of funds is the MRC through their Prime Lamb Key Program. The aim of the MRC program is to increase the volume of lamb production consumed in the high value domestic and export markets to 8% of current production levels by 1994. Only a small number of lambs meet Elite lamb specification at present, as the Victorian Livestock Market Reporting Service (1989-90) data indicated that this was as low as 1% of lambs produced (5). Initially products will be derived from lambs with carcass weights of 18 kg and above with a fat score 2-3. This is a similar range of carcass weights to those required for the Fresh Australian Range Lamb export program and the Trim Lamb promotion, both currently being conducted by the AMLC.

The program is underway in Victoria, New South Wales, South Australia and Tasmania. It involves all the State Departments of Agriculture, MRC, AMLC, Ausmeat, CALM Services and Victorian Farmers Federation. There are also many businesses including processors, wholesalers and retailers involved. Other groups continuously involved in discussions are the Victorian Stock Agents Association and the Meat and Allied Trades Federation.

Fundamental elements of the Prime Lamb Key Program

The Key Program has 4 sub-programs with a number of project areas which were initially developed in a Preparation report for the Key Program; they were described by McLaughlin (5) as follows:

1. Breeding and Reproduction - to provide producers with the access to genetic resources and genetic improvement techniques which will enable them to breed targeted higher value lambs. Projects involved and their locations are:

- Carcass research and data analysis
- Breeding value validation - Central Progeny Testing

2. Growth and Production - to demonstrate to producers in the major prime lamb production areas a range of proven technologies to produce higher value lambs at lower unit costs. Projects are:

- Production cost analyses
- Production systems studies
- Constraints and opportunities surveys
- Production systems validation trials
- Nutrition studies

3. Processing - to develop and rapidly implement the technology needed to improve the marketability of lamb in high value markets.

Meat quality studies, including monitoring current industry meat quality, effects of pre-slaughter management on quality, and evaluation of industry perceptions about meat quality

4. Market Development - to develop and sustain a marketing system for higher value Elite lamb which would provide producers with clear market signals concerning consumers preferences and to promote the consumption of higher value lamb. Projects are:

- Market development, in domestic urban centres; close links are also maintained with the AMLC Fresh Australian Lamb program which encourages exports of high value lamb
- Market signals studies
- Introduction of sale by description; this involves assisting abattoirs to implement carcass description, encouragement to automatic carcass description, encouraging retailers to order by description, showing producers how to use the feedback sheets from the abattoirs describing carcasses of lambs sold and prices paid
- Development of linkages between involved industry participants

Progress in the elite lamb program

Marketing Development

Small numbers of Elite lambs have always been produced; this was inevitable with a national annual kill of about 16 million. But if there had been consumers requesting the products, it would have been impossible to locate appropriate carcasses. Recognised channels for finding the carcasses were needed. The marketing developments generally entail the development of infrastructure in the industry, but there have also been some successes in lifting the sales of Elite lamb.

Trim Lamb is a marketing concept that was developed by AMLC, and Elite lambs are well suited to the products developed for Trim lamb. The promotion is well recognised, and surveys showed that a remarkable 87% of consumers were aware of the promotion and 46% had tried to obtain it (D. Evans. AMLC, personal communication). The "consumer pull" generated has supported the Elite lamb program.

Linkages are being developed as abattoirs in Victoria and South Australia (more are coming on line in New South Wales and Tasmania) purchase the product directly from producers. The processors supply several wholesalers, from where the retail and food service industries obtain appropriate carcasses.

The processors involved also produce price schedules so that producers know the price of their lambs prior to sale, and can compare all the prices currently on offer. Processors all classify the carcasses, some place the information on tickets and attach them to the carcass.

Workshops have been held for retail butchers showing them how to prepare boneless cuts, and to answer questions on yield and quality. These workshops are now only run for processors in the program who desire their retail customers to receive further information. This approach is used to direct efforts to retailers who are keenly interested, rather than the "shot gun" approach of disseminating information to everyone. The other reason for the selective approach is that the number of carcasses available is limited, so they are directed to the active participants in the program. Many retailers are now ordering carcasses on the basis of the information on the tickets.

There are a number of Product Development Officers (PDO) who are in effect specialised extension officers who work with all sectors of the industry. They help in research programs, demonstrate new systems to producers and processors and develop the linkages between producers and processors. They are developing lists of interested producers; in Victoria this list contains about 1500 farmers. Each of these producers receive a copy of the quarterly publication *The Elite Lamb News* which includes items on production systems, research findings, testimonials from various industry sectors and information on where to seek help.

The aim of the PDOs is to build up a supply of Elite lamb carcasses, and ensure the availability is all year round. They help farmers with live lamb assessments and advise on possible adjustments to management. Also the PDOs identify potential problems which may then be researched and solved before they become major impediments to the successful outcome of whole program.

Selling over the hooks is essential so that payment for the larger and leaner carcasses is on a weight and fat basis; this ensures that farmers are paid for what they produce. The saleyard system does not reward farmers who put extra efforts into lamb management, it merely averages prices over pens of stock (ie., it is not value-based marketing). In the past producers who have attempted to become involved have sometimes been severely punished for their efforts because heavy lambs have been unjustifiably discounted.

The provision of feedback sheets to producers giving information on the number of carcasses sold of various descriptions and the prices received shows how successfully they have met targeted specifications. This can provide the basis for both managerial and financial planning.

The *Market Development Officer* (MDO) deals with the retail sector. Apart from being able to show how to order the product by specification, he answers questions about cutting techniques, yield, costings, meat quality and product development. Although dealing mainly with the retailers purchasing from cooperating abattoirs, discussions with other retailers aim to achieve further converts and a resultant greater demand for the product.

Recently the MDO surveyed the retail butchers who were involved in the original series of Workshops. It was found that 83% of retailers surveyed had tried to obtain Elite lambs and 95% had displayed boneless products (Ross and Backhouse in press). This is an unusually high acceptance of the concept, and would be partially due to the butchers' entrepreneurial interest being high prior to the Workshop, and being stimulated in the longer term; nevertheless it was an encouraging result.

After 3 months the MDO is already filling an industry need as one independent supermarket chain is working towards providing only Elite lamb products. Also many retail butchers have already shown significant increases in profitability following advice given.

Wholesalers and the Food Service Industry are only just being approached to be involved. The AMLC promotions to the Food Service Industry have shown that there is considerable potential to increase the usage of lamb because industry operatives were mostly unaware that the larger and leaner lamb was available and provided an ideal raw material for their industry. A key problem identified with some wholesalers has been their inability to understand the tickets and hence use the information provided when selling their carcasses. It is anticipated that this problem is also widespread in retailing, wholesaling and in food service.

New Production Systems

Producers have been warned for some time that the technology required for producing Elite lambs was not simply an "add on" to their existing management system, but changes, some major, were necessary. There has been much research into identifying appropriate breeding stock, into developing on-farm management systems, into encouraging farmers to change to using the cryptorchid lambs for lean growth and showing the industry this would not lead to meat quality problems (7).

Breeding and Reproduction. A popular activity has been the Central Progeny Testing project which has been conducted at three centres in southern Australia. Producers submit sires for test breeding under controlled conditions; the rams are joined with a group of ewes and the progeny are monitored for growth rate and fatness. This program has the potential to identify the best sires in Australia. Already rams of potential to produce very large and lean lambs have been found. The studs submitting the rams must already be in the ram testing service, Lambplan, and so results from Central Progeny Testing enable comparisons to be made with many other rams.

Carcass and data analysis provide a common approach to analyses to that progress in manipulating the growth characteristics of lambs can be monitored.

Growth and Production. Nutrition studies have generally been focussed on the problem of providing a reliable supply of Elite lambs all year around. Therefore the times of the year when pastures are constraining growth due to quantity or quality are being examined carefully. Specialty programs of grain and cereal supplements, fodder crops, specialty (single sward) pastures, and 'freezing' pasture quality by spraying with glyphosate have all been used. Alternative management procedures are being studied, particularly growth path studies where the growth of the lamb is arrested for a time, with a subsequent rapid growth during realimentation. Thatcher and Gaunt (9) found that carcass composition might be manipulated in this way. Research in New South Wales (Oddie, pers. comm., 1993) is continuing these studies and shows promising results.

Careful evaluation of the economics of these practices is possible as economic models of the production systems have been developed. These models show that Elite lamb production is more profitable than traditional smaller and fatter lambs in many regions (Table 2). The analysis shows that producers make profits from the change to Elite lamb production in most situations. A key assumption is that only 30% of lambs reach Elite specifications, and the Elite lambs receive parity pricing on a per kg basis; already several abattoirs are paying premiums making Elite lamb production more attractive.

Table 2. Gross margins (\$) per ewe for traditional and existing lamb production systems for the four major Victorian production zones.

Production Zone	Gross margin (\$)	
	Elite Lamb	Current System
High Rainfall	32.59	30.15
Wheat/Sheep	22.28	21.37
Irrigation	18.18	12.96
Ballarat Finishing	32.00	28.34

Hall and Hoist (3) summarised relevant research of growth rate and leanness and provided useful information about the expected contribution various changes could make towards growing the appropriate lamb.

Production systems validation is conducted at many sites throughout south-eastern Australia. Validation involves detailed examination of potential systems on research centres; demonstration of promising systems is done on farms. Field days and discussion groups are focussed on these demonstrations.

Processing

So far no research or development activity has taken place directly into the processing of Elite lamb. There is research underway into packaging and gas flushing which has direct application and will be examined for export of primals in the future. A feature needing attention is the Trim Lamb concept (ie. denuding muscle of all fat, and removing bone as there are potential meat quality problems, particularly in storage and retail display).

Meat quality issues are critical to the program as industry people expect large lambs to be of poor quality, in their terms it is overfat with low yield, and has tough and dark meat. This is the result of prejudices perpetuated over time, and hence requiring careful attention. The program is able to examine, and if necessary, quash any suggestion of poor quality principally by using objective procedures and measurements. Most field experiments into nutrition, breeding and management culminate with meat quality testing to ensure the reputation of lamb as a tender product is not affected by changes in the production and marketing system.

A monitoring program regularly tests meat from retail butchers who are using Elite lambs, and these lambs are compared to any "traditional" lamb product which is available in the store. Channon (I) has found that large lamb, and often ram lamb, tend to be more tender than the existing product.

Conclusion

The Elite lamb program is an integrated research and development program with a clear marketing program with a clear marketing objective. This emphasis on marketing has not prevented animal research scientists undertaking either applied or basic research projects; it has however given that research a clear goal. Another advantage has been the rate at which the results can be integrated into management systems and tested on farms, with good farmer interest.

Scientists and extension staff involved have developed good rapport across state boundaries and between organisations. Furthermore, they have close contact with relevant industry organisations and entrepreneurs in the industry.

So far the program has made minor gains in the market, and the products are for sale, and at times this has led to premium prices to producers. The progress has been encouraging but is very fragile, it takes continuous effort to maintain interest and cooperation between participants. It is likely that it will take several years yet before the facilitatory role taken generally by Departments of Agriculture is no longer necessary and the industry will survive without external inputs.

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