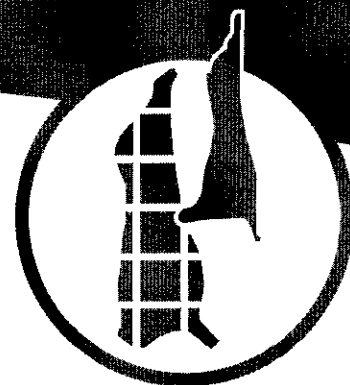


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The meat meal and tallow industry and its markets M.258

1993

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MEAT & LIVESTOCK
A U S T R A L I A

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1.0 EXECUTIVE SUMMARY

This is a report about meatmeal, tallow and related by-products of the meat processing industry. The study was commissioned against the background of declining returns for these products and the perception that meat processors are foregoing opportunities to improve returns by value adding and further processing.

The meatmeal and tallow markets are estimated to generate a revenue worth about \$330 million annually. If the current declines continue, the net loss to the meat industry is likely to be \$120 million over the next five years.

This report represents the final output of a comprehensive research study undertaken by Australians Agribusiness Services Pty Ltd (AAS Pty Ltd). The study extended over a five month period and involved a nationwide survey and interview programme with key producers and end-users. It was commissioned by the Meat Research Corporation (MRC) under the corporations meat co-products research programme.

AAS Pty Ltd undertook the task to address the following two broad objectives:

- To comprehensively describe the players, production, distribution structure, technology and costs involved, and
- to determine strengths, weaknesses, opportunities and threats to this meat industry sub-sector.

The following position statements for tallow and meatmeal are the summary conclusions that have been drawn.

1.1 REPORT CONCLUSIONS

TALLOW POSITION STATEMENT

Traditionally, tallow has a vast range of potential end use applications. However, it is predominantly used in the manufacture of soap, as a frying oil in food manufacture and as a fat for cooking purposes.

Tallow is a highly vulnerable product in the fats and oils market. The failure of tallow producers to focus on the strategic needs and trends in their key end-use markets has resulted in a steady decline in the product's relevance. Tallow is in danger of becoming obsolete in its traditional markets.

The principal strategy historically adopted by meat processors with respect to tallow, has been one of "disposal". The motivation being to dispose of the product as quickly and simply as possible. Thus at industry level, tallow producers have not acquired the necessary marketing skills to effectively compete against their more sophisticated, market-driven competitors in the fats and oils market.

Tallow has special strengths — it is readily available and, because the production infrastructure is fully depreciated, is relatively cheap to manufacture.

These product strengths are not matched by an effective and strategic understanding of the needs of the tallow market by tallow processors.

Consequently, tallow demand has shown a consistent long term decline against stronger, more vigorous and better targeted competitive products.

Tallow producers must understand and become more responsive to the needs of their end use markets. They must support their product with the technical and support services that accompany their competitors' product.

Failure to effectively address these issues will mean that in the long-term, tallow producers will be burdened with an ongoing and expensive waste disposal problem, rather than reap the benefits of a valuable revenue-generating and potentially profitable segment of the meat industry.

MEATMEAL POSITION STATEMENT

Meatmeal is a source of protein and nutrients for intensive livestock production.

Meatmeal producers have allowed their market share of the intensive livestock markets to fall. The product is relatively vulnerable within the protein meals market. It has not experienced the level of growth that its closest competitors, oilseed meals and legumes, have undergone.

Meatmeal producers have been slow to adapt to technological changes and have not marketed their products' key strengths. Producers have fundamentally failed to understand their markets and meat based protein products have not evolved at the same rate as competing products.

Meatmeal does, however, have significant strengths. It is a highly digestible and relatively low cost source of phosphorus. Domestically, meatmeal is readily available year round. Its key end markets are also growing.

End users are seeking improved technical performance and service. Consistent quality, lack of contaminants and an understanding of users needs will be essential if the meat industry is to realise the full value of this product.

KEY RECOMMENDATIONS

The following recommendations have been made as a basis for further industry discussion:

- Establishing a marketing support program including the development of a strategic industry marketing plan;
- Establishing an industry-based technical support capability to service user requirements;
- Establishing an education and training program that enhances existing schemes by incorporating users needs;
- Conducting research and development to improve product opportunities and performance, including an association with overseas research bodies;
- Providing public relations support for marketing endeavours;
- Facilitating longer term pricing and supply contracts, possibly via price reporting and price hedging capabilities;
- Developing a strategic industry plan involving key industry stakeholders.

Above all, the industry must recognise its position and provide support and commitment in order to resolve its predicament.

1.2 INDUSTRY OVERVIEW

Co-products represent a high volume (48%) but low value (17%) component of the meat industry. Rendered co-products represent about 19% of total volume, but only 5% of value to the meat industry.

Production of meatmeal and tallow is linked to meat production and has been increasing.

Australia is the second largest producer of tallow at 8% of world production, with the United States being the largest at 46%. World production is relatively static. Although Australian production is rising, domestic use is declining with exports representing 64% of production in 1991-92. Eighty percent (80%) of end-use applications are industrial purposes.

Within the world fats and oils market, tallow share is 11.3% and declining and its major competition producer is palm oil. It is estimated that the tallow price has declined in real terms by 44% in the 10 years to November 1992, mirroring world prices for competing products.

Australian production of meatmeal is increasing. Domestic consumption has remained relatively static since 1988-89, representing about 73% of production. The world protein meal market is dominated by soya bean meal at 69.8 million tonnes (55%).

The Australian meatmeal price is driven by world protein prices, particularly soya bean meal. In real terms, the price of meatmeal is declining albeit not as dramatically as the price for tallow.

1.3 ROLES AND RELATIONSHIPS

The rendering industry refines the waste from meat processing into valuable products. Tallow has historically been separated by products and processes into edible and inedible streams. Where a wet rendering process is used low-temperature fat-rendered fractions (LTFR) used in human and pet food can be produced as an alternative to meatmeal, which is produced by dry rendering.

Markets serviced by the rendering industry include human foods (processing, retail and food service), oleochemicals, soap, intensive livestock, pet food and fertilisers. Participants in the industry include service providers such as collectors and traders and secondary processors such as stockfeed millers and fat refiners.

There are two distinct types of renderers — abattoir renderers and service renderers (those whose sole operations are rendering). While there are fewer serviced operators by number, they contribute a disproportionate share of total production.

Traders play a key role in the export markets, providing commercial access to a large number of markets and customers. They also provide an important logistical role by providing specialised storage and handling facilities for tallow. They play a lesser role in domestic markets.

Tallow is used in a variety of food applications where its usage has been shrinking. Usage in soap is relatively static, but oleochemical consumption is

increasing in export markets. Intensive livestock and pet food consumption is expanding.

The largest usage of meatmeal is in intensive livestock (92%). Dry dog food is an important and growing market.

1.4 TRENDS

The concentration of production and ownership is a continuing trend. Prices paid by service renderers for offal have fallen, driven largely by falling tallow prices. Increasing production of competitive products such as palm is likely to continue.

Traders will continue to play a key role in the development of exports and can be expected to become more significant to the industry if exports increase. Their ownership of handling facilities provides them some protection of continued control.

Domestic use of tallow in soap and oleochemical manufacture is stable. Opportunities have been expanded in the export of refined oleochemicals. Tallow usage in food markets, however, is shrinking as consumer preferences move towards low-fat, low-cholesterol products. Opportunities may exist to refine tallow in order to remove cholesterol and further improve product performance.

Meatmeal use in the intensive livestock industry has expanded with increasing consumption of pig and poultry meats, albeit more slowly than the growth of usage of competing oilseed meals. The continued growth of intensive livestock production in Australia may be tempered by the import of pork and chicken. The use of meatmeal and tallow in feedlot cattle production, while significant in the United States, may remain small in Australia.

Dry dog food represents some growth opportunity, albeit from a small base, particularly if export growth is achieved. Export markets will remain critical, particularly for tallow, and especially in those markets within Asia where standards of living are improving.

1.5 COMPETITORS

Tallow has a 27% market share of the domestic fats and oils market. Oilseeds have the largest share at 59%. Peak usage of meatmeal in the protein meal market was in 1989-90. Peaks for cottonseed, canola meals and peas and lupins occurred in 1991-92. The oilseeds industry is the largest supplier into the fats and oils and protein meals markets. Its production cycle is short term and market demand for both oils and meals is linked back to production contracts by processors. Cargill is the dominant processor and has a good appreciation of its markets needs.

Palm products have generally specialised uses in the Australian market. Grain legumes are important in intensive livestock feeds, where their use has been growing.

Recycled fats are likely to become more prevalent due to respective Environmental Protection Agency (EPA) regulations. Poultry offals are often preferred raw materials in animal feeds but are limited by availability.

1.6 END USER PERSPECTIVES

The following key end-user perspectives emerge from this research:

Tallow

- Use within the food industry is declining owing to consumer health perceptions.
- Little technical service support is available to refiners and users who may wish to use different production methods.
- Recognition of customer needs is poor.
- Soap manufacturers are seeking better tallow quality and consistency.
- Species basis and lack of contaminants are of key importance to certain segments.
- Rejection of longer-term supply contracts is difficult for end-user markets to understand.
- A preference exists to deal with a small number of suppliers who can regularly perform to end-user quality and delivery needs.

Meatmeal

- Meatmeal consistency is at the forefront of intensive livestock end-user needs.
- Predictable levels of key elements such as phosphorus and individual amino acids are considered vital.
- Lack of contaminants and high digestibility are important.
- The product's value can be enhanced by greater recognition of key customer needs.
- End users have limited confidence in the availability of consistent product owing to a perception that meatmeal suppliers are opportunistic with respect to their markets, trading between export opportunities and domestic markets at will.
- There is little or no apparent understanding of customers' technical or market communication needs. End-user markets require consistency in two key areas:
 - the nutritional integrity of the product
 - the product's processability
- End users believe they have to make do with what they get, rather than get what they need.

1.7 ISSUES ASSESSMENT

Analysis of research information was performed using the following techniques:

- SWOT analysis
- Competitive performance diagnostic
- Competitive advantage

These have been summarised into position statements for both tallow and meatmeal. The results indicate that both products compete within relatively strong industries. There has been little attempt by producers of tallow and meatmeal to adapt to meet the needs of their markets.

Failure of products and services to fully meet market needs has allowed their competitors to gain significantly in market share.

There are however opportunities for producers of both products to improve and better utilise the inherent strengths. Of key importance is the need for meat industry management to give commitment and resources to develop these markets.

2.0 INDUSTRY OVERVIEW

2.1 INTRODUCTION

The livestock and meat processing industries are major contributors to the Australian rural and primary production sectors. They are major export earners as well as significant employers. The value chain in the livestock industry substantially focuses on the further processing of livestock to dressed meat for human consumption. Little attention is paid to other derivative products and the end markets that depend on them.

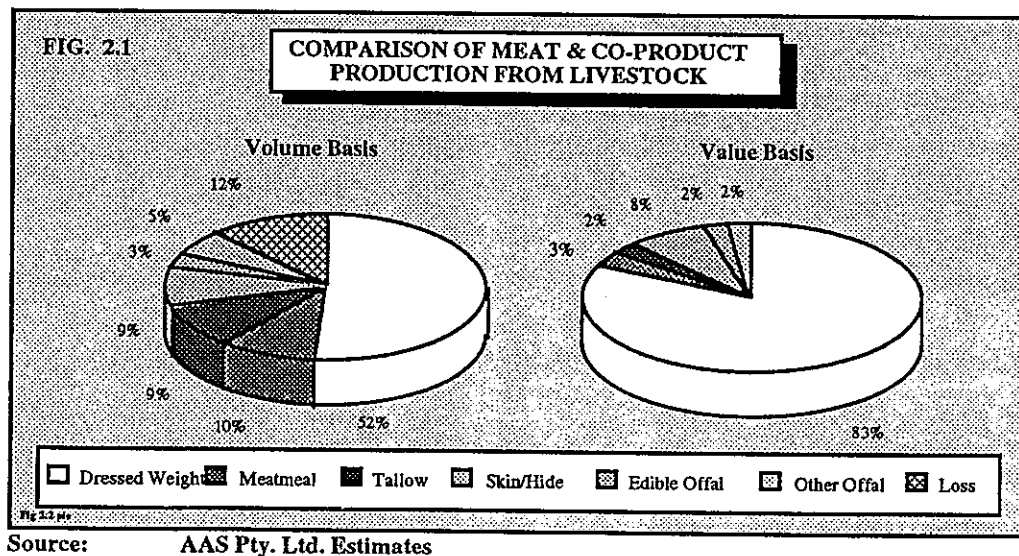
Notwithstanding this characteristic, co-products collectively represent significant value and have facilitated the evolution of major industries such as:

- Leather
- Soaps and Oleochemicals
- Pet food
- Intensive livestock

These industries have been built on the co-products of meat processing and are themselves highly sophisticated value adding industries.

2.1.1 THE RELATIVE IMPORTANCE OF CO-PRODUCTS

In addition to prime meat production, the slaughter of livestock results in the production of a range of by-products. In the past, various attempts have been made to illustrate the relative importance of co-products¹. However accurate determination has never been possible due to the lack of systematic data collection in this area. Australasian Agribusiness Services (AAS) Pty. Ltd. has imputed from a range of data sources the comparative significance by volume and value of co-products to the meat industry. This is illustrated in Fig. 2.1 below.



¹ Major reference papers are: Porter & Weeks, BAE 1983; Hayward & Spence, AMLC 1982; Wells & Whiteford, AMLRDC 1990; Spooner, CSIRO 1992.

These are abstracted in the Literature Review that accompanies this report.

On a volume basis these products represent a significant component of the livestock inputs, estimated at about 48% by volume. In contrast, however, and on a value basis they are worth less than 20% of the gross value of the livestock processing chain.

Given the highly disparate value-to-volume ratio of meat and co-products, it is not surprising that livestock producers and meat processors have historically focused their strategic resources on enhancing the position of their prime product, meat.

The detailed calculations for Fig. 2.1 are given below in Fig. 2.2.

FIG. 2.2

CO-PRODUCTS OF MEAT PROCESSING
Relative Importance by Value & Volume

	Volume '000 T	% ¹	Value \$/unit ³	Total Value \$'000	% ²
Dressed Weight	2,392	51%	2.06/kg	\$4.9B	82%
Meat Meal	460	10%	384/T	\$180M	3%
Tallow	420	9%	350/T	\$150M	2%
Skin/Hide	425	9%	1,134/T	\$480M	8%
Edible Offal	124	3%	1,000/T	\$120M	2%
Other Offal	252	5%	500/T	\$130M	2%
Loss	574	24%	0/T	0	0%
Total	4,647	114%	NA	\$6.0B	100%

Sources:

1. Commodity Statistical Bulletin (CSB), 1992
2. Hayward and Spence, AMLC, 1982
3. AAS estimates and industry discussion

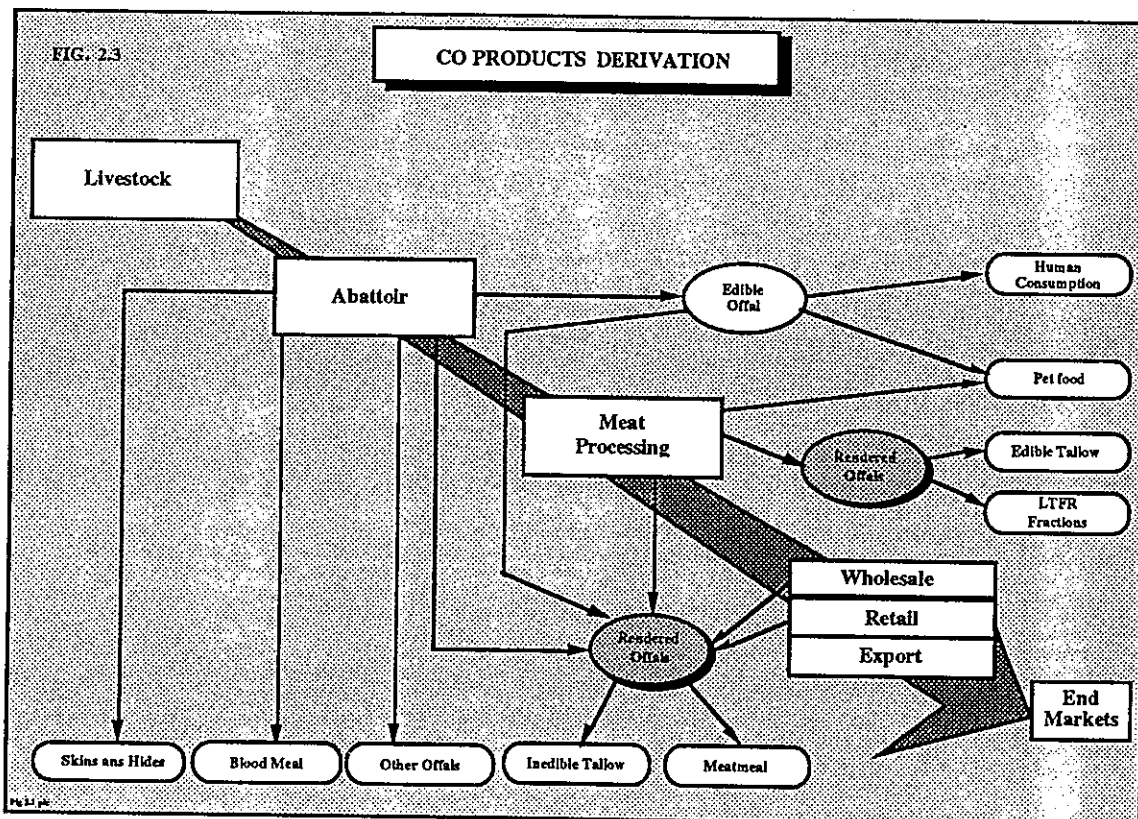
(* Note: Total exceeds 100% due to fat, bone, etc, included in both carcass dressed weight and meatmeal and tallow.)

These estimates relate favourably to those developed by Acil Pty. Ltd.², which estimated that by-products (excluding skins and hides) represent in value only about 8% of the processed beast. Roughly 5% value is extracted via rendering operations, with the remaining 3% being derived from other by-products such as edible offal.

2.1.2 CO-PRODUCTS DERIVATION

The derivation pathway of the major co-products of meat production is illustrated in a simplified form in Fig. 2.3. The following schematic representation identifies the nine basic co-product derivatives:

- Skins and Hides
- Blood Meal
- Edible Offals
 - Human Consumption
 - Pet food
- Rendered Offals
 - Edible Tallow
 - LTFR Fractions
 - Inedible Tallow
 - Meatmeal
- Other Offals



2.2 RENDERED OFFALS

2.2.0 OVERVIEW

Meat and bone meal and tallow are two of the major by-product outputs of the rendering process.

Tallow

Tallow has historically been grouped into the generic categories of edible and inedible reflecting the respective derivative pathways. Edible tallow is produced from edible fats and bones such as carcass trimmings, which are rendered using clean equipment. Inedible tallow is produced by rendering inedible offal, heads, bones, condemned meat and damaged hides.

At the turn of the century, tallow was produced by boiling down raw material in open pots. Rendering processes have evolved to the use of wet digestors, batch dry renderers and continuous renderers. As processes have changed, so too has the ancillary equipment, such as decanters, centrifuges, heat exchangers, bulk storage and transport, that supports the process. It is now possible to produce a high-quality tallow that matches the specification against which it is purchased.

Meat and Bone Meal

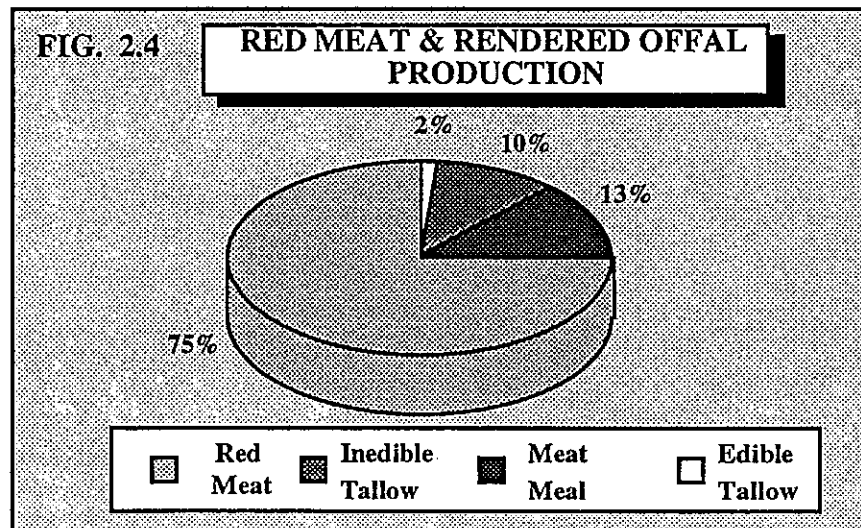
After tallow has been extracted from rendered material, a protein-mineral water phase containing some residual fat remains. This material is dried and ground to produce a meal that is rich in:

- Protein
- Calcium
- Phosphorus
- Other Minerals

Meatmeal has historically been valued as an organic fertiliser but is now predominantly used as a source of protein in high-density rations for the intensive livestock industry.

2.2.1 KEY CHARACTERISTICS OF RENDERED OFFAL PRODUCTION

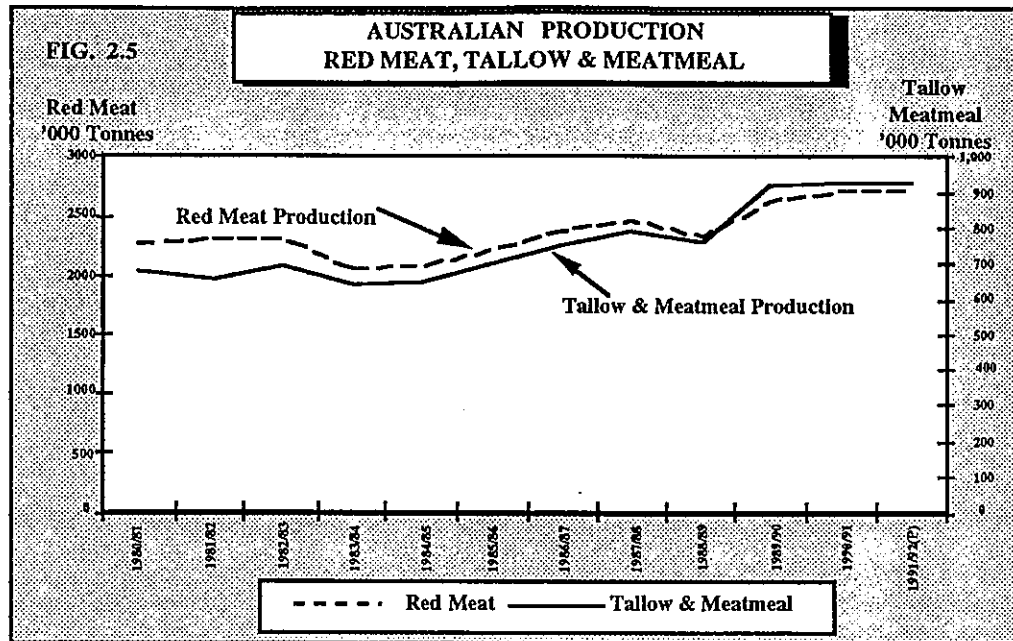
In 1991-1992, official Australian production of meatmeal and tallow was 921,451 tonnes. This represented 34% of the total carcase weight of Australian red meat production. This is illustrated in Fig. 2.4 below.



Source: Australian Bureau of Statistics (ABS) Catalogue 8359.0

The production of meatmeal and tallow are very closely linked to livestock slaughtered and red meat production, as is illustrated in Fig. 2.5 overleaf. This relationship has been extensively reported on previous occasions³.

³ Porter & Weeks, BAE 1983



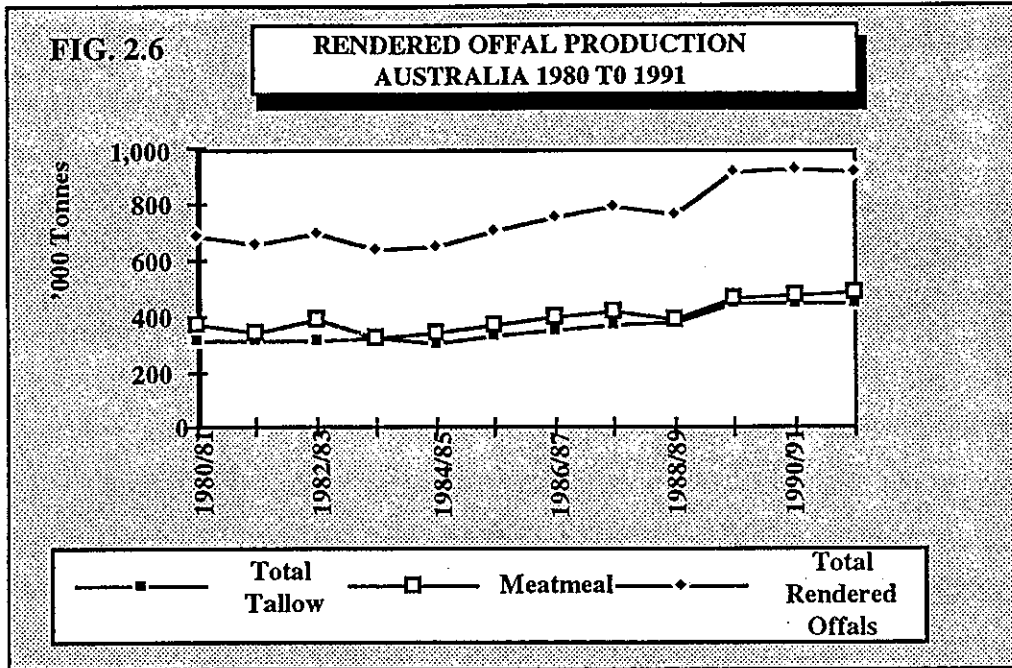
Sources: ABS Cat. 8359.0; CSB, 1992

Of significance is the trend identified above towards increased percentage recovery of rendered offals (relative to red meat produced) over the last 10 years. In part at least, the increased production can be explained by the joint product nature of meat processing. As the real price of meat increases, the extraction rate of meat can be expected to rise, reflecting the need to maximise the recovery of premium valued product. Conversely as the price falls, we can expect an increase in the production of rendered offals.

Market-based factors also have had a significant impact on the supply of rendered by-products, in particular, the increased trimmings of meat in response to consumer demand for boned out, leaner meat. Against this factor of increased supply is the trend towards genetically reared and grain fed lean beasts to meet increased consumer demands for lean meat. This is likely to have a depressing effect on the rendered offal component of meat production.

On balance, the evidence indicates that during the previous 10 years there has been a net increase in the supply of raw materials that are used in the production of rendered offals (see Fig. 2.6).

The proportions of meat and bone meal produced relative to tallow remains relatively constant. However, given the trends identified above and the increased production of leaner livestock, it can be expected that tallow output may decline relative to meat and bone meal.



Source: ABS Cat. 8359.0; CSB, 1992

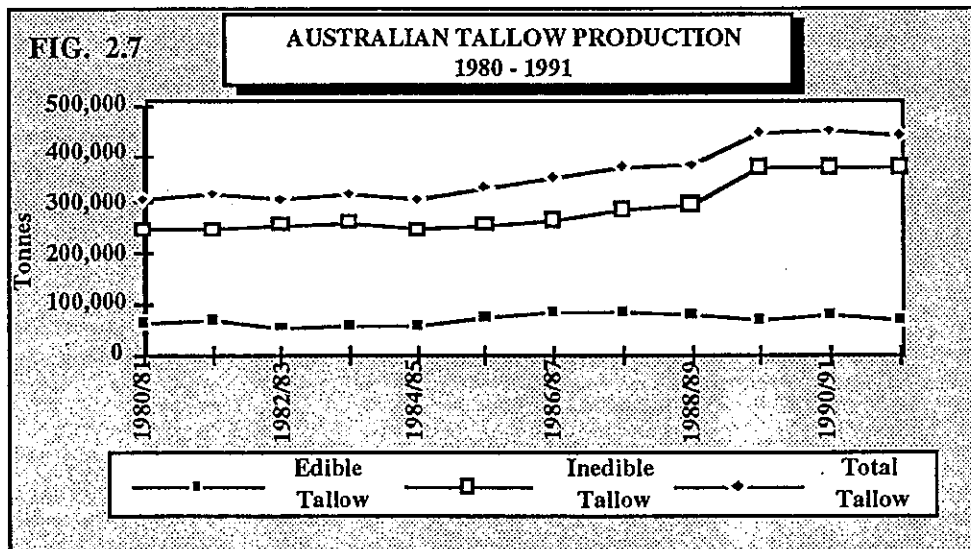
2.3 CHARACTERISTICS OF THE TALLOW INDUSTRY

Tallow is a product that is part of the very large world fats and oils market. While Australia is the second largest producer of tallow, its output is not significant enough to have any impact on world prices and demand.

2.3.1 PRODUCTION

Domestic Production

Official Australian production of tallow in 1991-92 was 441,478 tonnes (see Fig. 2.7).



Source: ABS Cat. 8359.0

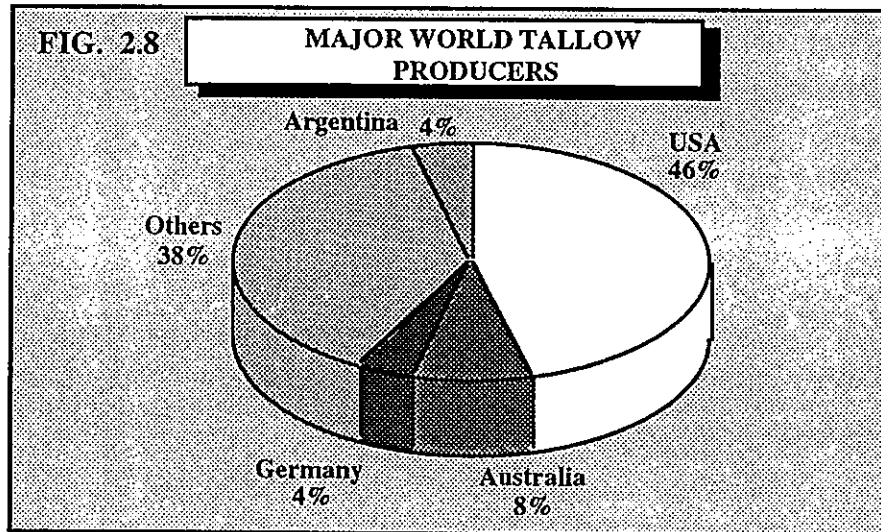
Production of tallow is strongly correlated to red meat production with a consistent output of 15% to 17% of the latter's tonnage. The relationship with

offal production is not as strong but stands at around 60% to 70% of offal output. In 1991-92, edible tallow represented 16% of total tallow⁴ production. Edible tallow has varied between 16% to 24% as a proportion of total tallow produced over the last 20 years. The lowest percentage output of edible tallow (16%) has occurred over the last three years. Production of edible tallow has fallen by 17% over the last five years from a peak of 84,875 tonnes.

While total tallow production is largely set via supply of inputs, the proportion produced of edible/inedible is more flexible and responsive to demand factors. (See competitive analysis.)

World Production

World production of tallow and greases for the calendar year 1991 was 6,854 million tonnes⁵. The United States was the largest producer, contributing 46% of total production, while Australia, as the second largest producer, contributed 8% to world production (see Fig. 2.8).

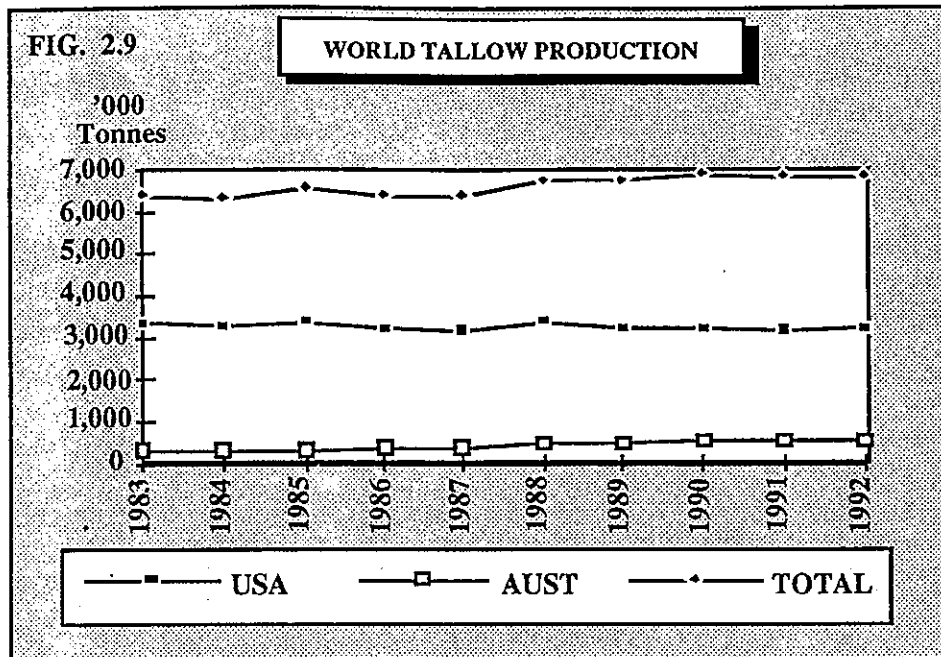


Source: Foreign Agricultural Service, United States Department of Agriculture

World production of tallow and grease has been fairly static having increased by only 2% since 1983. This trend is illustrated in Fig. 2.9 overleaf. Production is forecast to remain static for calendar year 1992.

⁴ See Glossary

⁵ Foreign Agricultural Service, USDA



Source: Foreign Agricultural Service, USDA

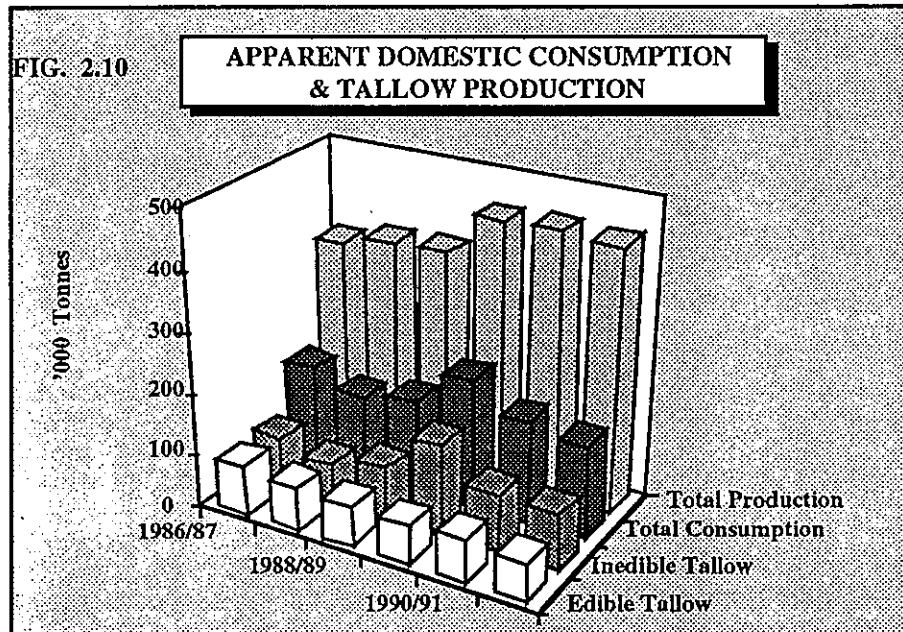
2.3.2 MARKET BEHAVIOUR

The two key markets that influence tallow are:

- Domestic Market
- Export Market

Domestic Market

The apparent domestic consumption of tallow in 1991-92, including a very minor level of imports, was 159,017 tonnes. This has dropped from a peak of 219,415 tonnes in 1989-90. The key trend and relationship to total tallow production is illustrated below (Fig. 2.10).

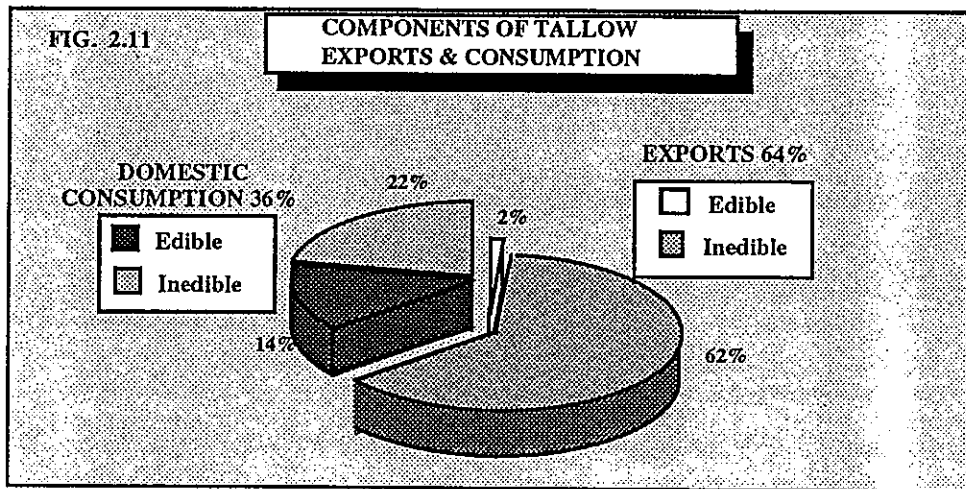


Source: AAS Pty. Ltd. determination from ABS data

The major industries of domestic consumption are the edible oil, oleochemical and stockfeed industries. Imports of tallow are minimal with 0.125 tonnes being imported in 1991-92.

Export Markets

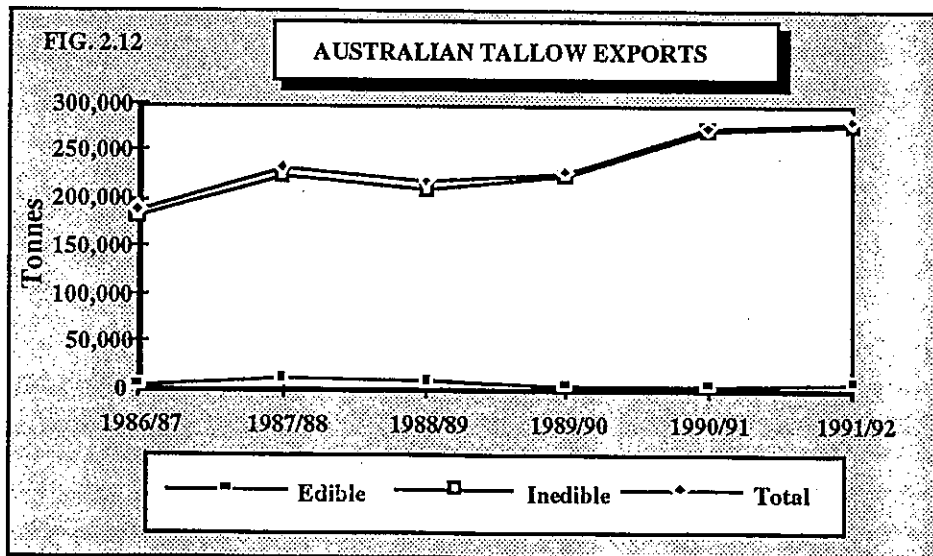
In 1991-92, Australia exported 262,461 tonnes of tallow. Of this, 6,785 tonnes of edible tallow was exported, representing only 2% of total tallow exports. However, these official figures should be qualified with the fact that an indeterminate amount of edible tallow is mixed with inedible and is exported as inedible.



Source: ABS Cat . 8359.0
ABS Unpublished Data

Papua New Guinea is the largest and most constant buyer of Australian edible tallow. While the majority of inedible tallow exports is officially unknown by destination, industry sources have identified the major export markets for inedible tallow to be South Africa, Pakistan, China and Korea.

An increasing proportion of inedible tallow has been exported over the last six years, climbing from 52% to 62% of production in 1991-92. Similarly, exports of total tallow has increased from 53% to 64% of production .



Source: ABS Comm. Codes 150200

In 1991-92, renderers directly exported around 35,000 tonnes of tallow, with the remainder and majority (88%) being exported by trading companies.

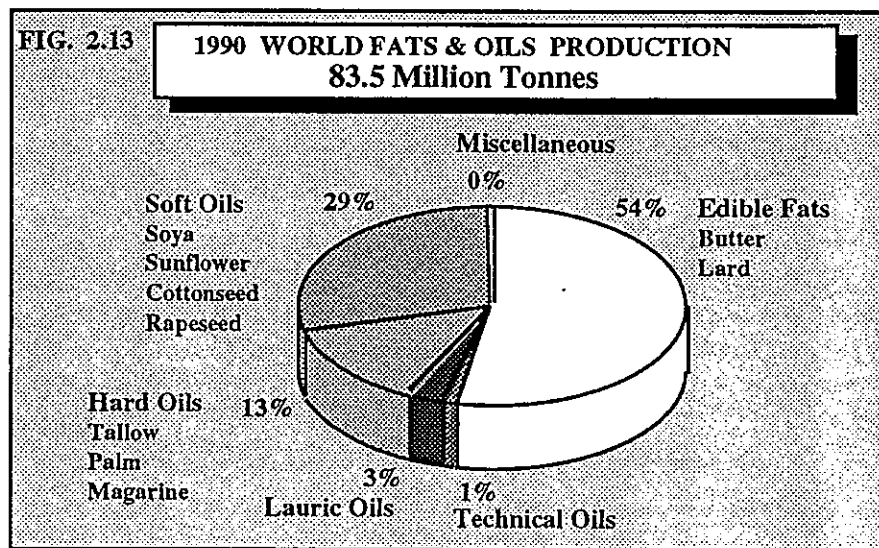
World exports of tallow and grease for 1991 were 2.116 million tonnes. The United States provided 49% of world exports, followed by Australia (13%), Germany (10%), Canada (9%) and New Zealand (6%). Major importing countries in 1991 were the Netherlands (12%), Spain (11%), the former Soviet Union (8%), Mexico (9%) and Japan (6%).

End-use destinations are not readily identifiable from published data. Industry sources indicate, however, that the majority of the exports goes into soap production (95%).

Within Australia there are some locations that are more heavily dependent on export markets. These areas include Western Australia and north Queensland where few alternative domestic markets are practicably available.

2.3.3 COMPETITIVE INFLUENCES⁶

The competitive arena for tallow is the world fats and oils market. Tallow's share of world production of oils and fats has decreased from about 15.5% in 1965 to 11.3% in 1985 and is expected to decrease to about 8.4% or 7.1 million tonnes by 1995⁷. Meanwhile, world demand for fats and oils is growing at 2.5 million tonnes per annum and will reach nearly 100 million tonnes by the year 2000.



Source: Food and Agricultural Service, USDA

Oils and fats can be divided into three major groups:

- (a) field crops: soya bean, sunflower, rape or groundnut
- (b) animal body fats: tallow, grease and lard
- (c) tree crops: palm and coconut

⁶ See Chapter 6 of this report for more in-depth analysis of this area.

⁷ Food & Agricultural Service, USDA

Over 50% of world fats and oils supplies come from by-product oils (e.g., butter, fat and tallow) or from tree crops (e.g., Palm and coconut oil). Thus, less than 50% of world fats and oils supplies is met by the short-term market responsive seed oil crops of soya beans, sun flower seed and rapeseed (i.e., demand growth is inelastic). During the 1980s, oils supplies expanded faster than protein. Consequently oil prices have declined faster relative to protein meals.

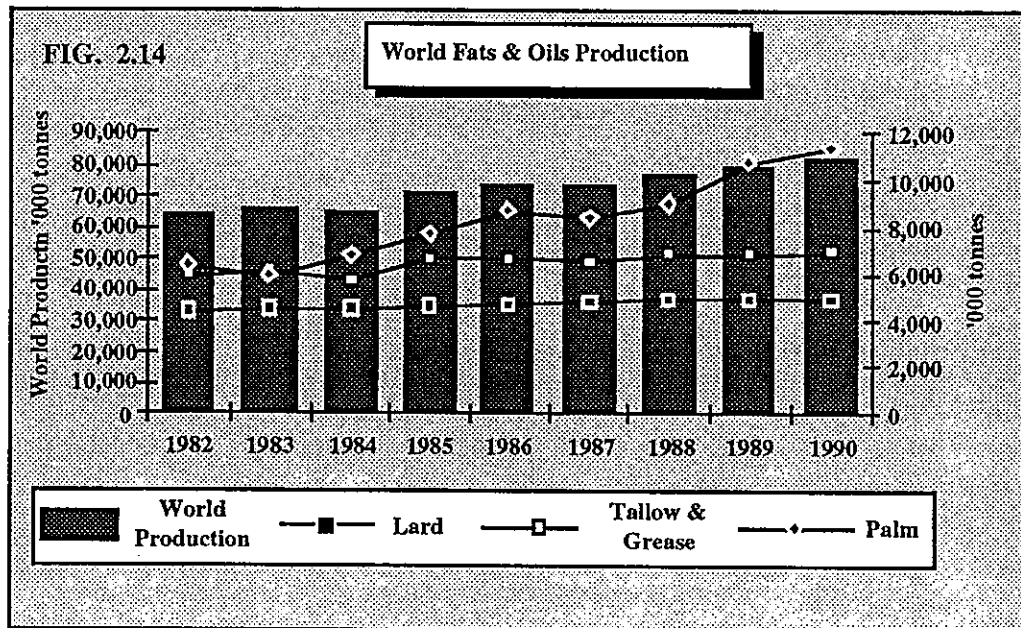
The world market is highly competitive as most fats and oils have similar properties and are therefore highly interchangeable. Substitution is made easier by sophisticated methods of processing and refining.

Globally, around 25% of vegetable oils are used for industrial applications compared with tallow, of which 80% is used in industrial applications.

The vegetable oil industry is investing in research into custom-designed oils. Also, genetic engineering of plants has progressed with amazing speed. It is conceivable oilseed crops to be produced with different and perhaps unique fatty acids, oils and fat properties. This will enable the vegetable oil industry to develop specialty oils that have greater industrial applications.

Palm Oil

Notwithstanding substitution of fats and oils, tallow's major competitor is palm oil which has had a major influence in displacing animal fats from many products.



Source: Food and Agriculture Service, USDA

Palm crude, the composite palm before separation into olein and stearin, is used in a range of inedible product applications, such as in the rolling of tin-plate as a lubricant.

When refined into palm olein and palm stearin, palm crude becomes a significant competitor in the edible oils industry and, together with the socio-competitive nature of other vegetable oils, has had a dramatic effect on tallow's share of the edible oils market, particularly in Western nations.

Palm stearin, the harder oil, is the closest physical substitute to tallow. It has a melting point of 50^o C and is a solid at room temperature. Palm stearin is used in meat pie casings, solid bread fats and similar heavy pastry products.

Palm olein is liquid at room temperature and is used as a frying oil.

Palm kernel, which is the oil extracted from the centre of the palm, is not a close substitute for tallow. It is a closer competitor to coconut oil and is used in dairy formulations such as dairy whips.

World palm oil production in 1990-91 was 11.195 million tonnes, up 150% from 4.413 million tonnes in 1979-80. After several years of sizeable expansion, palm oil production has leveled over the last couple of years.

There are a disparate array of statistics on the importing level of palm oil into Australia. All figures, however, confirm palm oil as the dominant importing oil into Australia.

Official Australian Bureau of Statistics (ABS) statistics show in 1990-91 that there were 21,495 tonnes of palm stearin imported into Australia with 3,497 tonnes of palm kernel and 262 tonnes of palm oil and an unspecified amount of palm olein⁸. Other industry sources have indicated a rise in total palm imports from 22,000 tonnes in 1979-80 to 81,000 tonnes in 1990-91⁹. Other industry sources have given the following breakdown for palm imports from Indonesia and Malaysia.

Malaysia and Indonesia account for 90% of world exports. The majority of Malaysian exports are refined processed oils while Indonesia essentially exports crude oil.

As with world production, world exports have risen dramatically. At 7.27 million tonnes in 1990-91, palm oil exports have risen by 1,527% over the last 46 years.

FIG. 2.15

**MAJOR PALM OIL IMPORTS BY SOURCE
1992 ('000 Tonnes)**

Year	Malaysia	Indonesia
84/85	50	
87/88	74	
89/90	63	40
90/91	52	42

Source: Oil World Annual

⁸ ABS Comm. Code 150200

⁹ Personal Communication. Palm Oil Association

There is no duty on palm oil coming into Australia.

The Oilseeds Industry

In 1990-91, Australia's oilseed industry has increased acreage 36% over the previous 10 years. Production over the same period increased 59% to 1.099 million tonnes. Domestic use of oilseeds has also risen in the 10-year period by 41% to 747,000 tonnes. Cottonseed is Australia's dominant oilseed. Notable also is canola's increase in production in light of declining oilseed and soya bean production.

These trends are reflected in the production of oil. Rapeseed (canola) oil production increased 87% to 45,550 tonnes in the 10 years to 1990-91.

2.3.4 PRICE FACTORS

The price of soya bean oil has a dramatic effect on the pricing of other fats and oils. Soya bean dominates the international oilseed markets as a consequence of its huge production base. World soya bean production in 1990-91 was 102.85 million tonnes representing roughly 50% of total world oilseed production. In 1990, production of 16.6 million metric tonnes of soya bean oil represented 20% of the world fats and oils production.

Prices of the base oil crops have remained relatively stable throughout the world in recent years. This reflects a fundamental structural change that has occurred in the composition of industry. Historically the US soya bean was the most dominant crop. In the event that the US soya bean crop failed or was oversupplied, prices would react sharply resulting in wide price swings over time. Today there are a number of significant production areas throughout the world with different growing cycles enabling greater price stability.

With the high degree of competition and increasing substitution, the prices of individual fats and oils traded are affected by the prices of all the fats and oils internationally. Except for talloil, tallow is usually the lowest-priced product in the world oils markets.

Notwithstanding this fact, changes in average prices for individual oils can differ widely.

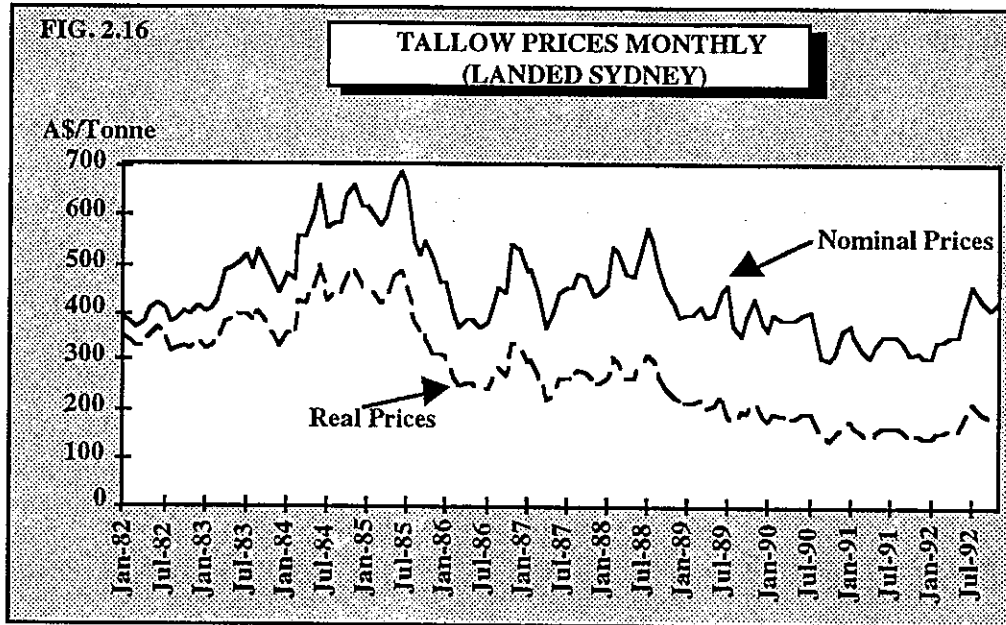
The domestic tallow price is driven by world market prices. Australian tallow producers are price takers and the local market expects to pay exports parity.

The price received for Australian tallow has reflected the fall in international level in demand for edible tallow. The export price has fallen from A\$1,278/tonne in 1986-87 to A\$655/tonne in 1991-92. Western countries such as the United States are switching out of animal fats to vegetable-based fats, reflecting health trends. These trends are not evident in lesser developed countries. Self-sufficiency in edible fats and palm oil in previously major importing countries, such as India, results in heavy international competition.

While prices for Australian exports of inedible tallow have not reflected as dramatic or definite a trend, prices nevertheless are still weakened, with official figures showing a unit value of A\$358.65 for 1991-92 compared to a six-year high of A\$464.12 in 1987-88.

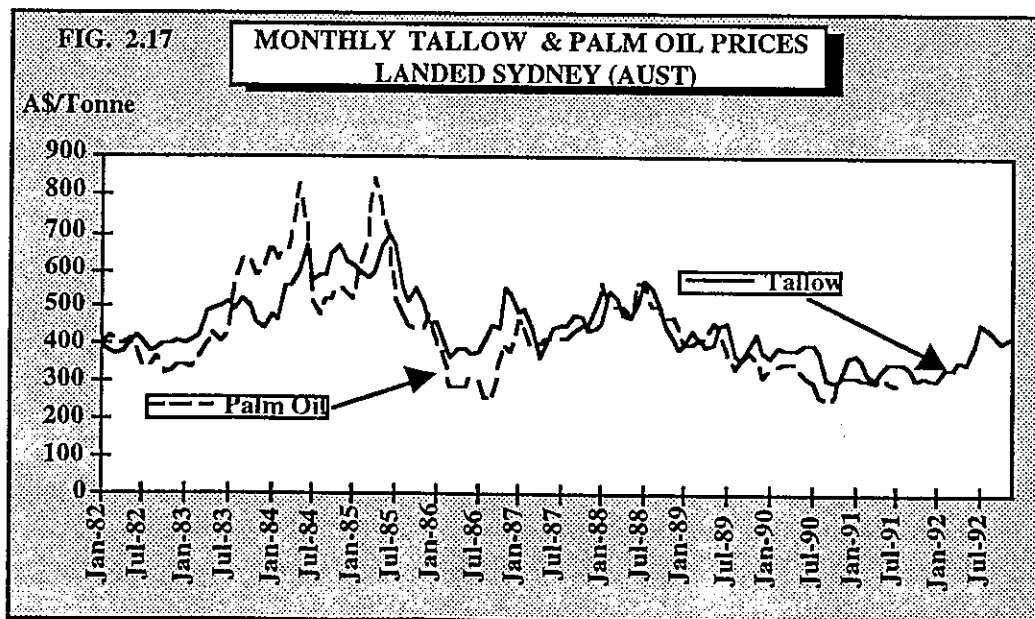
An analysis of monthly tallow prices landed in Sydney over a 10-year period is reported in Fig. 2.16. This series illustrates a 44% decline in real terms in tallow prices from January 1982 to November 1992. Within this period prices have ranged from a high of \$492 in November 1984 to the low of \$142 in January 1992. This represents a price fall of 71% in real terms.

Examining the same series for annual seasonal influences did not reveal any strongly seasonal factors impacting on the price. However this does not negate the longer-term influences that world weather patterns (e.g., drought) can have on availability and price.



Source: Industry survey data

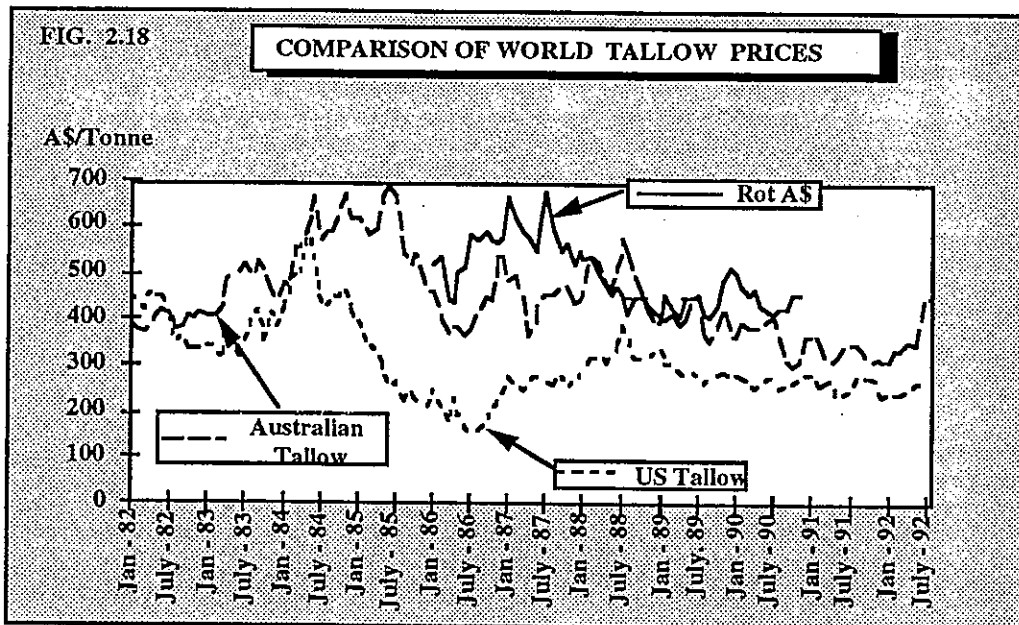
The relationship of tallow to world fats and oils prices and in particular to its closest competing product, palm oil, is reflected strongly in Fig. 2.17. The nominal domestic tallow prices closely follow those of palm oil over the 10-year period examined.



Source: Industry survey data
Food and Agricultural Service, USDA

A comparison of the prices of United States tallow and Central European tallow with Australian tallow prices demonstrates that a relationship exists between US tallow and Australian tallow. However this relationship is less strongly defined than is the relationship with palm oil prices.

The series reported below (Fig. 2.18) highlights the impact that the exchange rate has had on local prices. The US tallow price has declined faster than the Australian tallow price. The removal of the managed exchange rate in favour of a floating Australian dollar resulted in an artificial price inflator on internationally traded items such as tallow.



Source: Industry sources; ,Oil World Annual, USDA

Note: Australian tallow - FIS Sydney, US tallow - FOB, Central US (original series US\$/100 Pounds), Rot A\$ - CIF; Rotterdam (Original series US\$/tonne)

In summary the major factors impacting upon the domestic price of tallow are identified as:

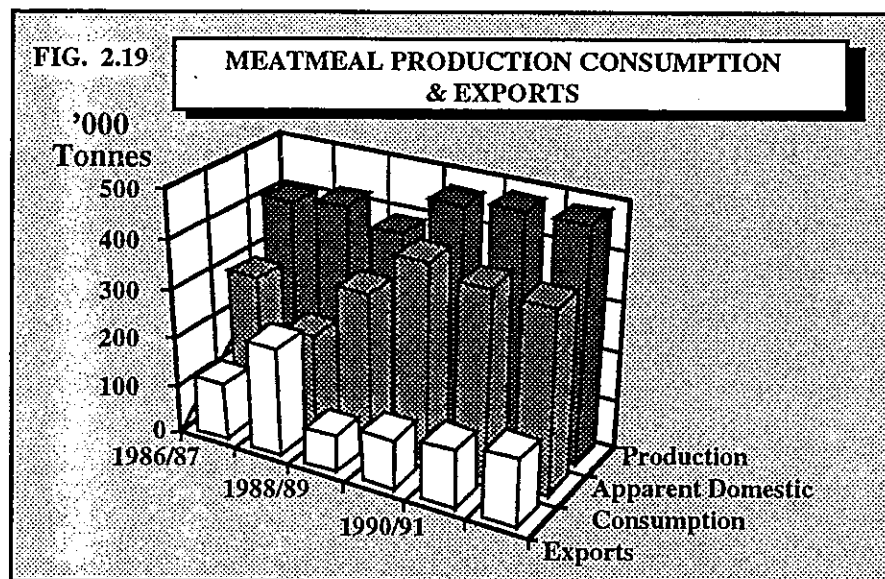
- Exchange rates
- Domestic supply of tallow
- Palm oil prices
- American tallow price
- World demand for oils
- World consumption trends
- Soya bean price

2.4 CHARACTERISTICS OF THE MEATMEAL INDUSTRY

Meatmeal competes in the proteins market and is an important nutritional ingredient for the intensive livestock industry in Australia and internationally. As with tallow, Australia is one of the largest producers of meatmeal but the total volume produced is not significant for our local industry to have any major impact on the world markets.

2.4.1 PRODUCTION

Aggregate livestock slaughterings are generally held to have the dominant influence on meatmeal production. Meatmeal production also correlates to offal production, with a variance of around 10% from 69% to 79% over the 1980s. Nevertheless, other factors may at times also influence the production rate, notably changes in the composition of slaughterings and changes in meatmeal and meat prices.



Source: ABS Comm Code 2301

Over the past 10 years to 1991-92, Australian meatmeal production has steadily risen from 16% to 18% of total red meat production to 479,973 tonnes per annum. This represents an increase of 72% over the period.

2.4.2 MARKET BEHAVIOUR

Domestic Market

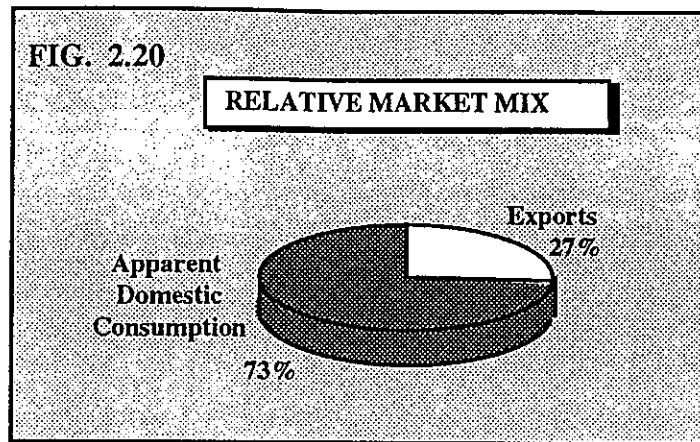
The domestic markets for meatmeal are dominated by the demand from the intensive livestock industry. Apparent domestic consumption, as calculated by AAS Pty. Ltd. has increased over the past six years (see Fig. 2.19). In recent years annual consumption has remained steady at around 370,000 tonnes per annum or nearly 75% of total domestic production.

Exports and World Trade

Australian exports of meatmeal in 1991-92 were 138,104 tonnes¹⁰ representing 29% of total production. Exports have fluctuated dramatically over the last six years with a 65% plunge in exports from 1987-88 to 1988-89. Since 1988-89, exports have grown steadily.

Some locations in Australia are much more dependent on export markets. These areas include Western Australia and north Queensland where fewer alternative domestic uses are practical.

¹⁰ ABS Comm. Code 2301



Source: AAS Pty. Ltd.

Total world exports of meatmeal stood at 968,462 tonnes in 1990, representing a value of US \$244.54 million. Major individual exporting countries are the United States (10%), Australia (11%), France (7%), Germany (9%) and New Zealand (8%). Europe accounts for 48% of world exports, South America (17%), Oceania (19%) and North America (12%)¹¹.

Asia is the major importing region of meatmeal with 47% of total world imports in 1990 valued at US\$150.77 million. Japan alone imported 24% of world imports of meatmeal. Other major individual importing countries include the Netherlands (18%), Indonesia (8%), China (6%) and Mexico (5%)¹¹.

In the three years to 1990, the total value of world imports of meatmeal has fallen by 17% to US\$300.87 million (World Price Index)¹¹.

Japan is the major market for Australian exports of meatmeal. Japan's market share has been steadily increasing and in 1991-92 stood at 56%. Indonesia is the second largest market with 14%, followed by Hong Kong (5%) and Malaysia (2%)¹².

Imports

Meatmeal imports are minimal and in 1991-92 stood at 1,236 tonnes¹². Official apparent consumption of meatmeal 1991-92 for Australia has been calculated by AAS at 371,488 tonnes¹³.

2.4.3 COMPETITIVE INFLUENCES

Most of the world's protein meals are produced from oilseed crops such as soya bean, sunflower, rape and groundnut. Meatmeal occupies only a minor place in the protein meals market.

The world protein meals sector is extremely volatile as many of the dominant meals come from annual crops, the supply of which can change rapidly and dramatically with changes in agricultural practices or the weather.

¹¹ Food & Agricultural Organisation

¹² ABS Comm Code 2301

¹³ ABS Cat. 8359, Comm. Code 2301

The European Economic Community (EEC) and the United States constitute roughly 50% of the world's protein feed market and can therefore influence prices. In this respect, the regulatory requirements are of considerable importance to the world market.

Trade in protein meals grew rapidly in the 1980s as the trend towards processing at the production source intensified. Some protein meals like rapeseed, sunflower meal and palm kernel meal had annual growth rates in trade of 10% or more for the entire decade. Even though soya meal experienced only modest relative growth, it still provides two-thirds of the international trade in protein meals.

The world protein meal market produced 125.2 million tonnes of meal in 1989-90¹⁴. The market is projected to produce 169.5 million tonnes by 1999-2000, representing a 35% growth.

World exports of protein meal in 1989-91 was 40 million tonnes. Projected exports for 1999-2000 is 62.0 million tonnes, an increase of 55%¹⁴.

Soya Bean Meal

Over 55% of protein meal is derived from soya bean. World Soya bean production in 1990-91 was 102.85 million tonnes, representing production growth of 19% over the previous 10 years¹⁵. This also represents 47% of the world's total oilseed production.

Nearly 95% of world soya bean production is concentrated in the United States, Brazil, Argentina and China.

The United States is the largest exporter at 15.24 million tonnes in 1990-91. The principal importers are the EEC with 50%, Eastern Europe with 20% and a growing list of Middle-Eastern, Asian and Central American countries.

World production of soya meal in 1989-91 was 69.8 million tonnes, a 20% increase over the previous 10 years. Soya bean meal is projected to increase to 95 million tonnes by 1989-91, a 36% increase.

Soya meal exports were 26.2 million tonnes in 1989-91, representing 67% of total world protein meal exports. Soya bean exports are projected to increase to 40 million tonnes in 1999-2001, a 52% increase.

Feedmills in Australia now have a choice of a wide range of materials - six vegetable proteins, five animal proteins, two full fat oilseeds and four legumes. (See chapter 5.1 for list.)

Soya bean will remain meatmeal's main competitor. The use of grain legumes has had a dramatic impact within the Australian pig and poultry industry, replacing traditional levels of soya bean, cottonseed and sunflower meals.

In 1990-92¹⁶ the acreage of soya bean in Australia fell by 18.4% to 40,000 hectares¹⁷.

¹⁴ Oil World Annual

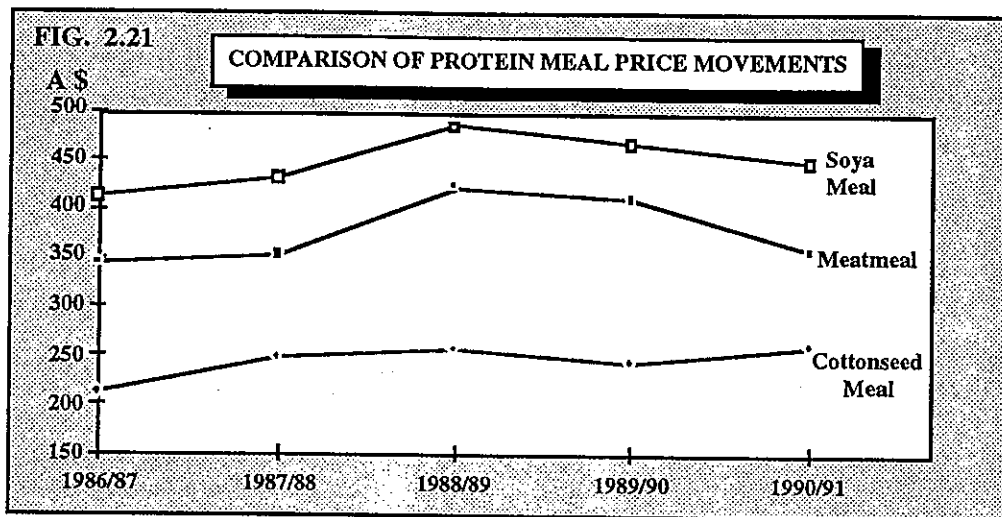
¹⁵ CSB

¹⁶ Soya meal production has been erratic over the last 10 years to stand at 54,710 tonnes in 1990-91.

¹⁷ ABS Cat. 7330.0, 7321.0

2.4.4 PRICING FACTORS

The meatmeal price is set by world protein prices. Soya bean meal dominates this market and therefore forms the basis for the meatmeal price. The link between the soya bean price and meatmeal is reflected in Fig. 2.21.



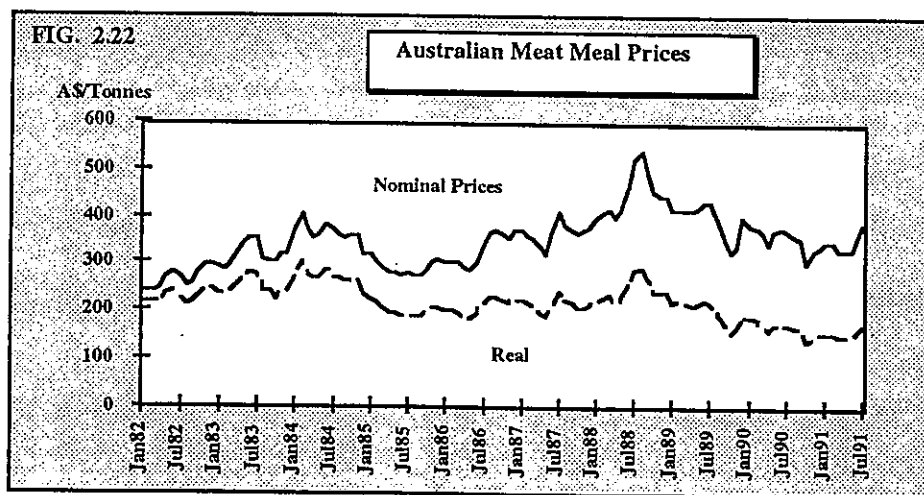
Source: CSB

In addition to soya bean meal, a number of other factors influence the domestic price of meatmeal. A pricing trend analysis (see Fig. 2.22) was constructed around a 10-year monthly price series¹⁸. A number of critical issues emerge.

The real price of meatmeal is falling and has done so steadily over the 10-year period. Notwithstanding this price fall, the rate of decline has been slower than that for tallow. The major domestic determinant is the strong and underpinning demand from the intensive livestock industry.

Another important factor providing a temporary boost to meatmeal prices in the early 1980s was the freeing of the exchange rates, which resulted in an artificial increase in price as the Australian dollar found a new parity.

Seasonalising the series shows that there is no significant influence from annual seasonal factors.



Source: Industry Survey, AAS Pty Ltd.

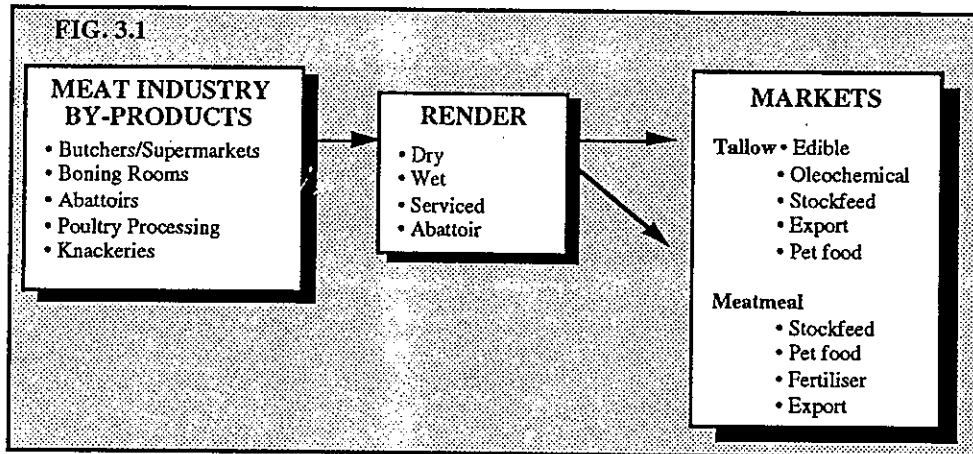
18 Prices of meatmeal landed Albury NSW, industry sources

3.0 RENDERED OFFALS INDUSTRY A DESCRIPTIVE ANALYSIS OF ROLES AND RELATIONSHIPS

3.1 OVERVIEW: THE PRODUCT FLOW

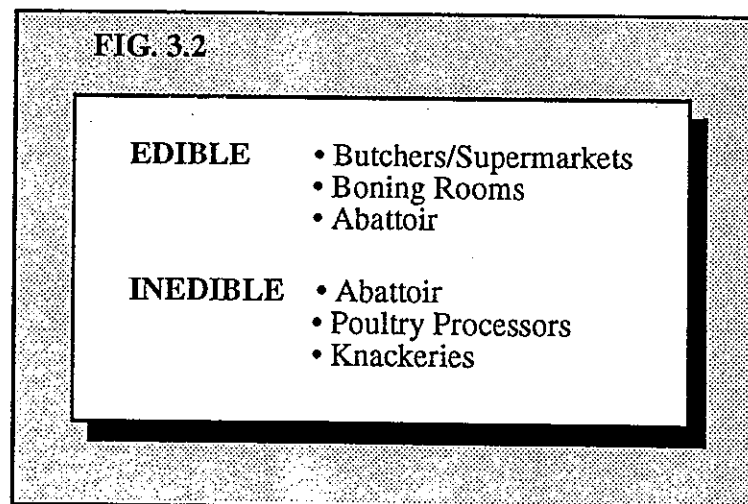
3.1.1 THE FLOW

In simple terms, the rendering industry refines or prepares the waste from the meat processing industry into an acceptable form for subsequent further processing. A simple model describing the key processes is as follows in Fig. 3.1.



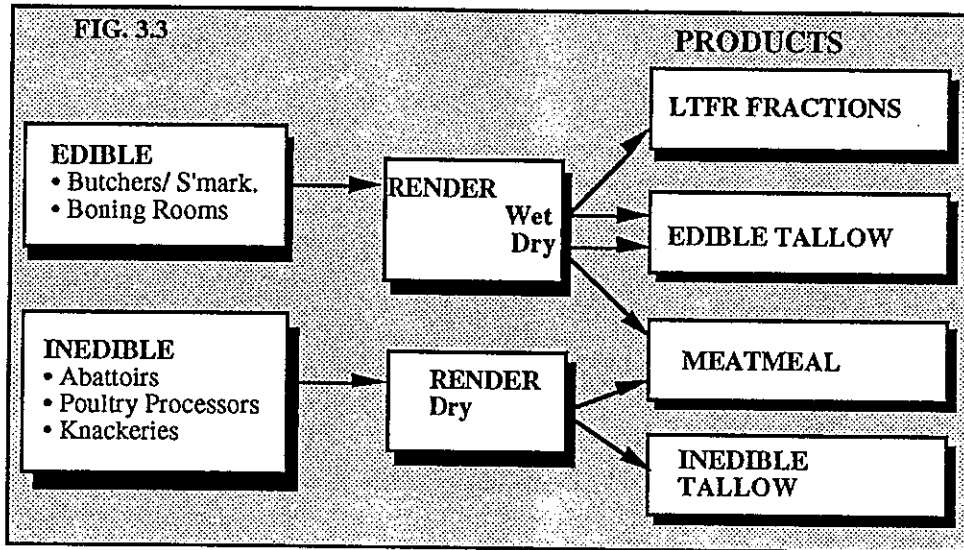
3.1.2 THE IMPORTANCE OF RAW MATERIALS

The source of raw material defines the two basic end-product streams. These are edible and inedible. Inedible product includes abattoir, poultry and knacker waste products such as heads, feet and viscera. Edible by-products are generated from several sources, all within the meat processing industry, such as the abattoir kill floor, butchers, supermarkets and boning rooms. This raw material is made up of fat, bone and meat trimmings.



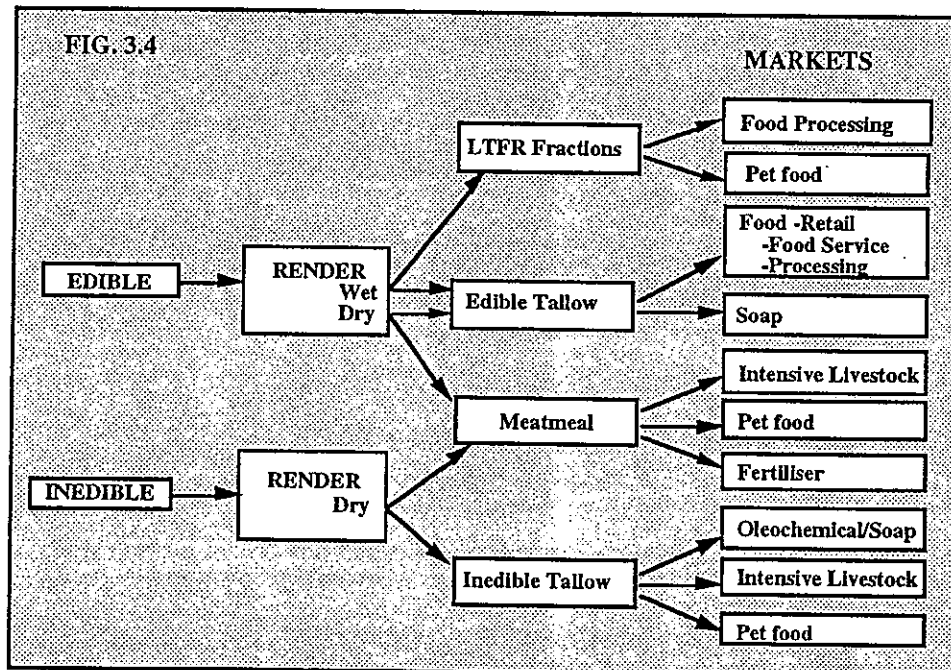
3.1.3 THE IMPACT OF PROCESS

Rendering is often separated into these two product streams but may be handled through a common system, particularly with smaller operators. The products produced are often separated into the type of rendering process used as well as the nature of the raw material. Edible raw materials may be processed by either a wet (low-temperature fat rendering (LTFR) process) or a dry processing method. Inedible raw materials are usually processed by the dry method.



3.1.4 KEY END-MARKET SEGMENTS

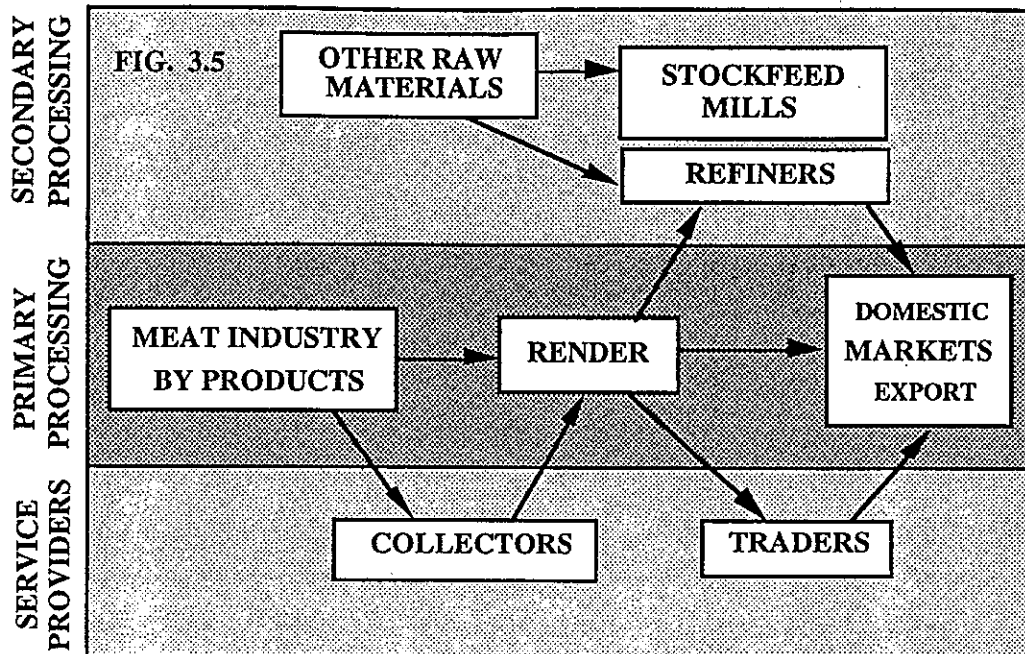
Both domestic and export markets are supplied by each product group. The major markets supplied are shown in the following:



These end-market groups may be either domestic or export.

3.1.5 OTHER KEY PARTICIPANTS

There are also important subsidiary service providers which augment these primary process flows. These are illustrated in the following diagram.



Collectors

Collectors have traditionally performed the important function of providing raw materials to renderers. These days they may be independent contractors or may operate as a part of a rendering business. They are particularly important to service renderers who by definition depend entirely on outsourced raw material.

Traders

The traders' role includes providing blending and infrastructure facilities (storage, terminals and distribution), particularly for tallow, as well as a market network important for exports. These services result in a large proportion of exports being handled through traders. Their facilities and network is less important in the domestic market where they are used by end-users for back-up and top-up purposes.

Secondary Process

In the case of at least two major end-use markets, important secondary processors are involved. The domestic edible fats and oils market in food processing, retail and food service is further processed and packed by specialised refiners. They use tallow and other raw materials often refined and blended to produce products required by their end-food markets.

Another example of a secondary processor is in the production of stockfeed. The stockfeed mill takes raw materials from a variety of sources, blends, mixes and processes them into a product which is then used in the intensive livestock industries. In some cases, the stockfeed operation is integrated with the downstream intensive livestock production.

3.2 SUPPLY OF RAW MATERIAL

3.2.1 SOURCES

Supply of raw material for rendering comes from two major sources as by-products of the meat industry.

These have been described in 3.1 as the edible and inedible product. Inedible materials include products from abattoirs, poultry killing plants and knackeries and include heads, tails, feet, viscera and other non-edible offals.

Edible materials arise mostly from post-abattoir processing — boning rooms, butchers shops, supermarkets and further processing. Some raw material is generated from the abattoir kill floor, for example, caul, kidney and channels. The products are generally fat, bone and trimmings.

In larger meatworks, especially those servicing the export boned beef market, abattoirs and boning facilities are integrated.

There has also been a trend towards retail purchasing of meat from supermarkets. In line with this trend, there has been growth in the central or remote boning and supply of boxed beef to supermarkets. The collection of raw materials from butchers, shops and supermarkets is therefore becoming logistically easier.

Specialised collectors, either as independent contractors or renderer employees, perform an important role in gathering raw materials for rendering.

This service is crucial in the collection of edible raw materials because of the large number of scattered suppliers and the fact that few of these suppliers have their own affiliated renderers.

3.2.2 RENDERERS

There are two distinct types of renderers: abattoir renderers, those associated with abattoirs; and service renderers, those specialising in rendering.

There are 13 service rendering plants in Australia compared to 122 abattoir rendering plants, with the majority of meatmeal and tallow production coming from the latter.

Nevertheless, despite their low numbers, the service renderers provide a notable percentage in terms of volume.

Service renderers produce an estimated 105 kt and 128 kt of tallow and meatmeal, respectively. This translates to 24% and 27% of production.

Because it is their principle business, the scale of operations for service renderers tends to be much larger than those of abattoir renderers. They operate in or close to major population centres where availability of raw materials from non-abattoir sources, such as butchers and boning rooms, is good.

There are a number of small abattoirs that operate rendering plants solely out of the need to process or dispose of by-products. They usually have few alternatives due to their isolation from larger service renderers.

As a collective, renderers are a fragmented group compared to other players in the rendered offals industry.

FIG. 3.6 **NUMBER OF REGISTERED RENDERERS**

Renderers and Service Renderers per State	Abattoir Renderers	Service Renderers	Total
New South Wales	38	3	41
Victoria	14	6	20
Queensland	29	1	30
South Australia	13	1	14
Western Australia	16	2	18
Northern Territory	3	—	3
Tasmania	5	—	5

Source: Queensland Livestock and Meat Authority (QLMA)
Australian Quarantine Inspection Service (AQIS)
Environment Protection Authority (EPA)

A listing is provided in the industry participant supplement.

3.3 TRADERS

Traders have played an important role historically in both the meatmeal and tallow markets. AAS has identified 17 traders of tallow and meatmeal in Australia. These are listed in the industry participant supplement.

3.3.1 TALLOW AND TRADERS

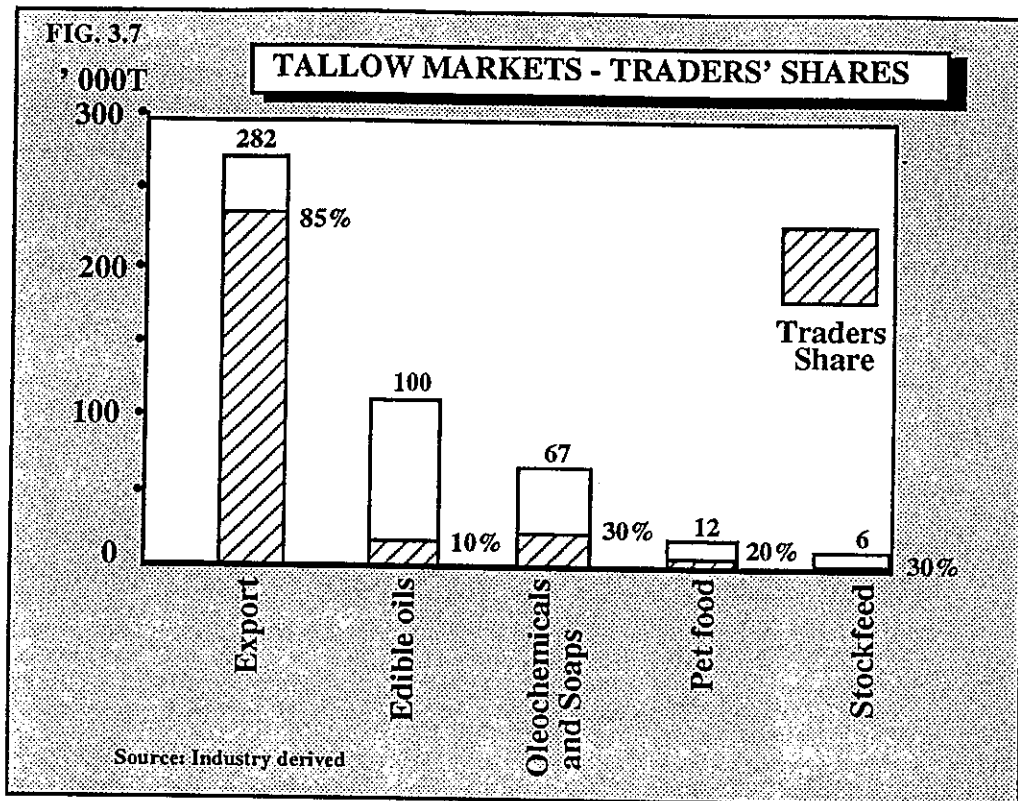
AAS discussions within the industry indicate that between 65% to 70% of tallow is channelled through the traders. This equates to 280,000 tonnes to 300,000 tonnes per annum based on 1991-92 production of 341,478T¹⁹. Of the 17 Australian traders identified by AAS, five traders alone would account for the majority of tallow traded.

Traders play an important logistics role in the tallow market. This is particularly important with the export market, where a specialised terminal facility is desirable to consolidate cargo and to minimise demurrage costs. Traders also play an important role in establishing and maintaining a market network. This is particularly important in the export markets where individual suppliers are generally too small or not sufficiently interested to have easy commercial access to the large number of markets and customers.

Another important role played by tallow traders is blending. They have access to a wide range of products of varying quality, and blending to meet particular customers specifications is common. Whether this is ultimately of benefit in achieving quality consistency in a total quality approach to manufacturing is questionable.

¹⁹ ABS Cat. 83590

In end-markets, the following chart illustrates the relative role played by traders to the various end-market segments supplied.



Export Markets

Tallow traders have a dominant control of product flow into the export market. AAS estimates that they control approximately 240,000 tonnes to 250,000 tonnes per annum or 85% to 88% of the 282,461 tonnes exported in 1991-92²⁰. Two traders alone account for over 90% of exports. As mentioned above, a major reason for this dominance is access to terminal facilities and market network.

Edible Oils Market

Traders do not play a substantial role in tallow trade in the edible oil industry. The two major competitors in the edible oil industry are Meadow Lea Foods and Edible Oil Industries (EOI). These two companies are owned by Goodman Fielder Wattie Ltd. and Unilever, respectively. Both EOI and Meadow Lea are supplied mostly by renderers. Service renderers are important suppliers in this market, providing at least 40% of the tallow of the edible oil industry.

The remaining 60% is supplied by abattoir renderers with traders being used as a top-up. Industry discussion indicates that traders provide 10% of the trade to the edible oil industry.

Oleochemical and Soap

Traders supply approximately one-third of the tallow sold into the oleochemical and soap industry, which AAS estimates at 67,000 tonnes per annum. Of this, 22,000 tonnes per annum is used in soap manufacture, with traders providing some 50% to 60% of this volume.

Industry discussions reveal that 45,000 tonnes of tallow used in the oleochemical industry is supplied by traders.

Stockfeed

Tallow traders do not play an active part in the stockfeed industry. Industry estimates suggest that they supply around 20% or less of the tallow that is used by the stockfeed industry.

Pet food

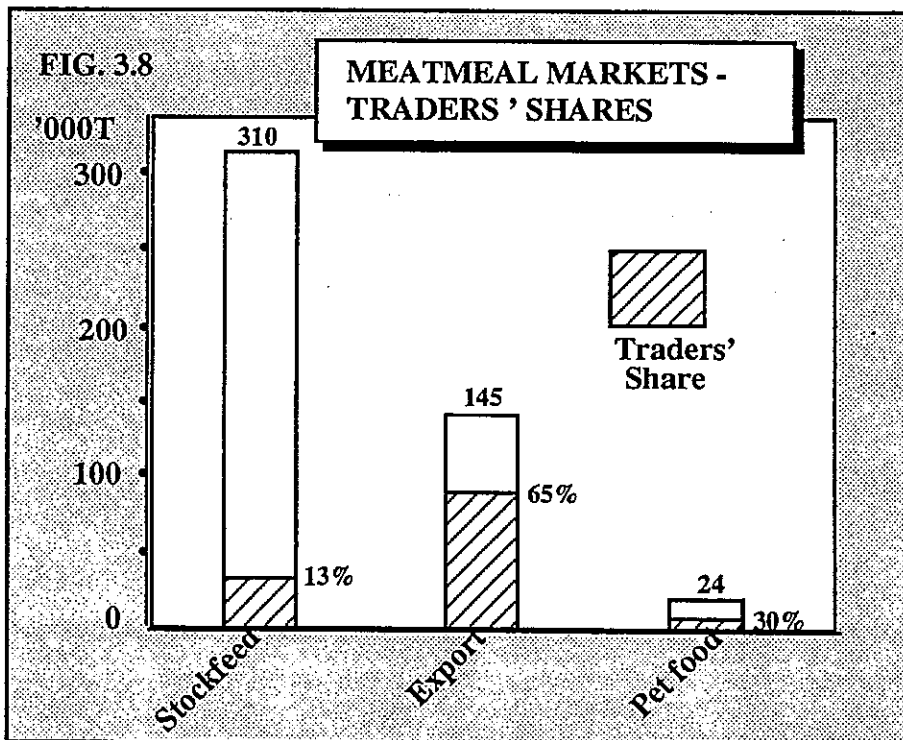
Industry sources estimate that traders supply around one-third of the 12,000 tonnes of tallow that is purchased by the pet food industry annually.

3.3.2 MEATMEAL AND TRADERS

Logistically, meatmeal is much easier to handle. This is particularly important in the export market where it can be containerised fairly simply. It does not require the specialised handling and terminal facilities that is essential for tallow.

Access to a market network is still an important criteria for utilising a trader in this sector and many renderers choose to use traders for this purpose. This is usually restricted to export market development rather than domestic markets, where local producers can economically access them.

The following chart illustrates the relative importance of traders to respective end markets.



Source: Industry derived.

Official production of meatmeal in 1991-92 was 479,973 tonnes²¹. Imports were minimal at 1,236 tonnes²¹. AAS estimates that traders handled 155,000 tonnes of meatmeal.

The major meatmeal traders include:

- D.R. Johnston Group Pty. Ltd.
- Craig Moyston
- Standard Commodities
- Brisbane Exports

Export Markets

The dominant traders of meatmeal do not play a significant role in tallow trading. This is also true in reverse and reflects a rather "club like" division of the markets between traditional participants.

As with tallow, traders' dominance in the meatmeal chain is through the important role they play in the export market. AAS estimates that traders account for 65% to 75% of total meatmeal exported. This represents 95,000 tonnes to 100,000 tonnes of the 145,377 tonnes²² exported in 1991-92 and 60% to 65% of the meatmeal that flows through traders' accounts.

Stockfeed

AAS estimates that at least 40,000 tonnes of meatmeal per annum is sold in the intensive stockfeed industry via traders. This represents approximately 13% of the meatmeal used in this market. Traders are used by the stockfeed industry purely for "top-up" purposes, preferring to buy directly from meatmeal producers.

Fertilizer

Traders have minimal role in the fertilizer industry.

Pet food

AAS estimates that traders supply about 30% of the dry dog food market. This equates to an estimated 7,000 tonnes per annum.

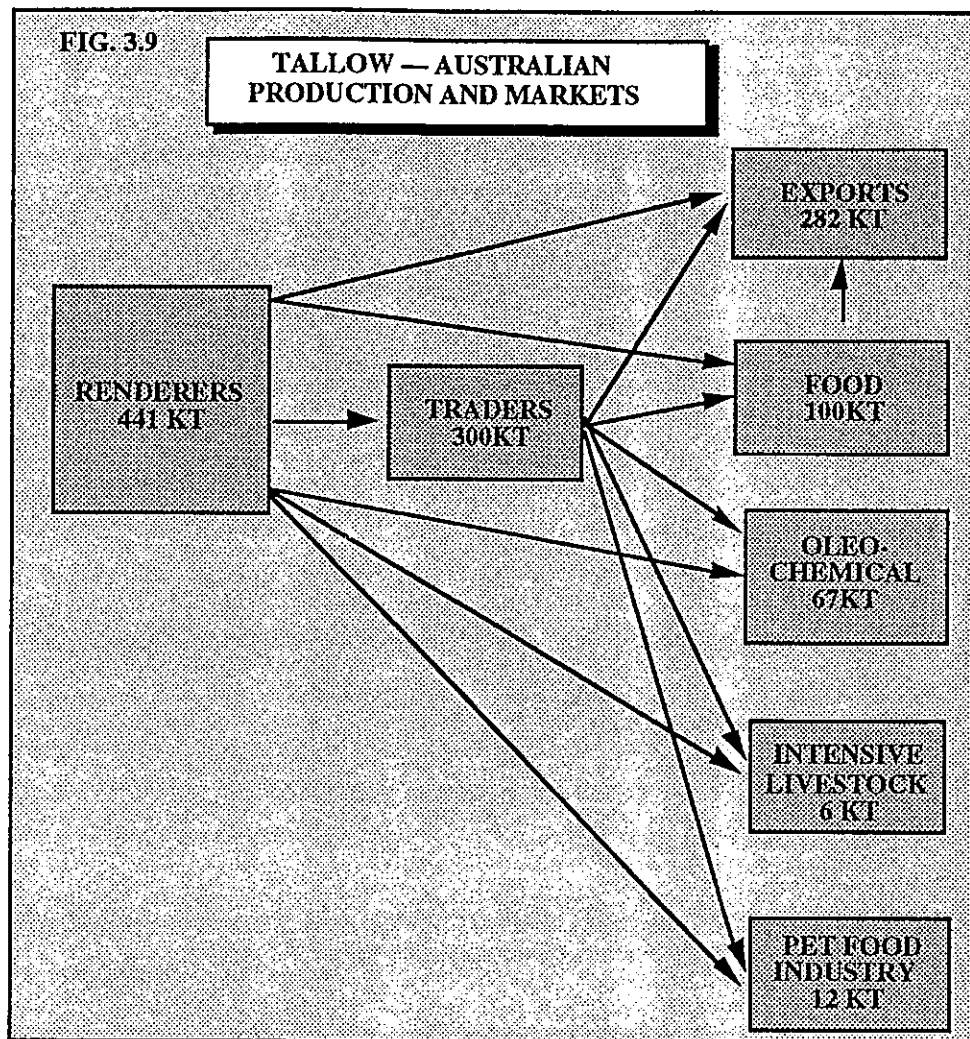
3.4 KEY END USE MARKETS — TALLOW

The key end-use markets for tallow are identified in Fig. 3.9, below, together with industry volume estimates. These can be grouped for analysis broadly as:

- Food
- Oleochemical and soaps
- Intensive livestock
- Pet food

21 ABS Cat. 83590

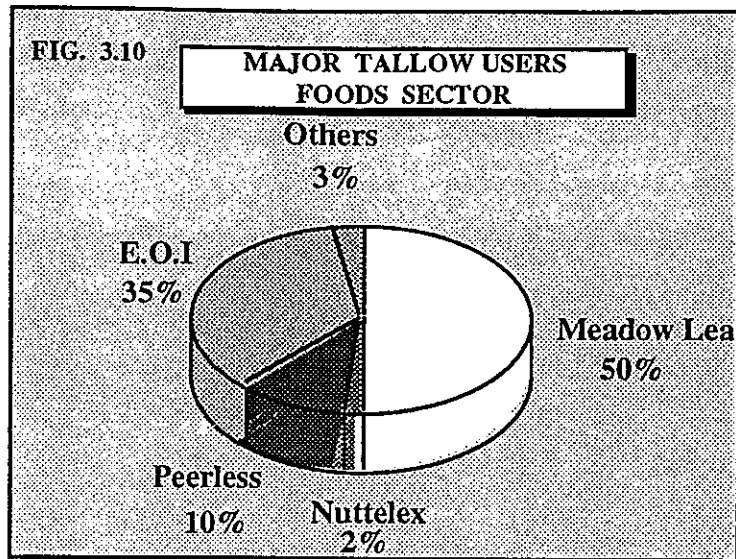
22 ABS Comm. Code 23011090



3.4.1 FOOD

AAS has calculated total edible oils consumption by the food sector at approximately 100,000 tonnes. Some of this appears to be re-exported in refined or processed form.

It is difficult however to establish a precise estimate of consumption by this sector, with estimates of comparative usage by competitors varying by up to 50%.

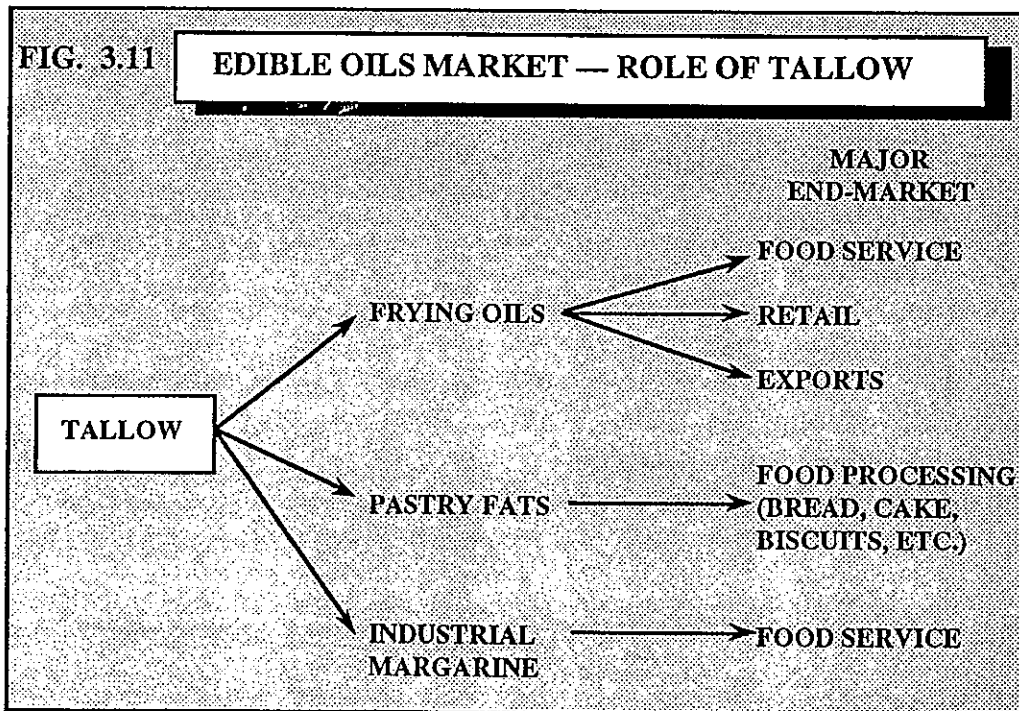


Source: Retail World, 1992

The two major producers are Meadow Lea and Edible Oil Industries, which consume an estimated 85% of this sector's total demand (see Fig. 3.10, above).

Other important producers include Peerless Holdings Pty. Ltd. and Nuttalex Food Producers Pty. Ltd.

Tallow is used in the following major product groups: industrial margarine, commercial frying oils (solid), retail oil (solid) and pastry fats, the latter being an ingredient for bread, biscuits and cakes. This is illustrated in Fig. 3.11, which follows. AAS estimates that roughly half of the tallow purchased by the edible oil industry is used as pastry fats, with the remaining 50% being consumed in retail and food service sector oils.



Frying Oils — Food Service

The deep-frying fats segment of the food service market was in 1992 worth \$76.7 million²³, which included the fast-food market at \$58.0 million. This is estimated at 43,330 tonnes, a volume comprising both animal and vegetable-based oils. Major brands include Frytol (EOI), Countrywide (Peerless) and Gold Bullion (Meadow Lea), all of which are animal-based products.

AAS estimates that in this segment, while tallow comprises at least 80% of the final product, it constitutes only 28% of the wholesale price.

Frying Oils — Retail

The solid retail oils market was estimated to be worth \$7.089 million²⁴ in 1991. This market includes both animal and vegetable oils. Brands include Supafry (Meadow Lea), Hi-Fri (EOI) and Frize (Nuttelex). AAS estimates that the volume of this market is 3,700 tonnes per annum.

While tallow represents at least 80% of the final product, its value is only 20% of the retail price of the final product.

Frying Oils — Exports

A significant proportion of the production of EOI and Meadow Lea is exported. Its major use is as a frying oil and the major market is China.

Pastry Fats

There is extensive use of fats in the food processing industry for bread, pastry, biscuits and cakes. Significant changes in the usage of tallow in this market are occurring. For example, Australia's major biscuit manufacturers have switched to non-animal—based fats in reaction to consumer demand for healthier products.

Overall, we can expect the level of tallow going into this industry will decline. Industry sources have quoted a decline of 3% to 5% per annum.

The current level of tallow consumption in this industry is 23% of total production. Moreover, it represents about 54% of the Australian domestic tallow market.

Industrial Margarines

The market for industrial margarine in 1991 was worth \$11.6 million²³, with a volume of 6,010 tonnes. Major brands include SPD (EOI), Meadow Lea (GFW) and Miracle.

Industrial margarine comprises 100% tallow if animal-based. The value of tallow in the final product is approximately 20%.

23 BIS Shrapnel, 1992

24 Retail World, 1992

3.4.2 OLEOCHEMICALS AND SOAP

Soap

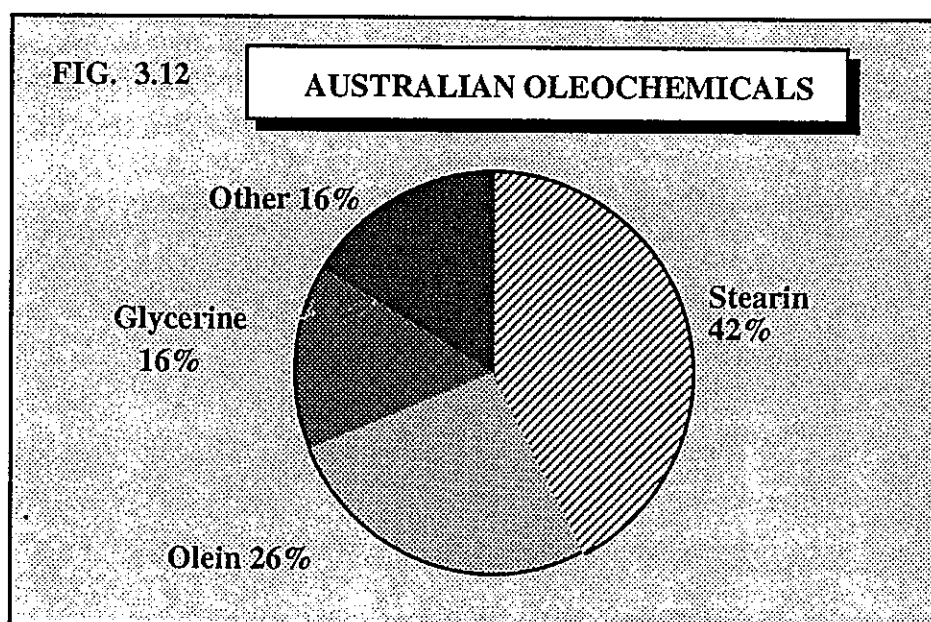
In 1991, the retail toilet soap market was worth \$135 million on a volume of 26,157 tonnes²⁵. Major brands include Palmolive (Colgate Palmolive), 17.6%; Imperial Leather (Cussons), 12.1%; and Lux (L & K: Rexona), 11.5%.

Volumes used in the hospitality/food service market are estimated at 6,000 tonnes. At least 4,000 tonnes of soap are exported per annum. There are also small imports. Fats typically constitute 85% of the product. Use of tallow amounts to more than 22,000 tonnes per annum. Tallow constitutes only 3% of the final product by value.

Oleochemicals

Around 45,000 tonnes of tallow is channelled through the oleochemical industry.

The Australian oleochemical industry uses tallow in the production of chemicals, as shown in Fig. 3.12.



Production is concentrated within the industry fats business of Unilever, Unichema.

Stearates are used for plastic and metal processing lubricants, colour fixing in polymers, acid scavengers and heat stabilizers in PVC production. Palm crude is the main competitor for tallow in this market segment.

Glycerine is an important food emulsifier, used to soften and prevent scaling in bread and to improve the texture of starchy food. It also is used as an emulsifier in cosmetics and pharmaceuticals and as a lubricant, emulsifier and antistatic agent in the textile, plastic and metal industries.

Other uses of tallow include methyl esters, particularly sucrose monoesters. These are used as surfactants in food, cosmetics and pharmaceuticals.

Over 50% of oleochemicals are exported.

Japan is the major export market for all products (50%) followed by Korea and Taiwan (15–20%).

3.4.3 INTENSIVE LIVESTOCK

Tallow is increasingly being used as a feedstock for the intensive livestock industry. It is essentially used as a source of energy.

AAS has estimated the stockfeed consumption for 1991 in Fig. 3.13 below.

FIG. 3.13 AUSTRALIAN STOCKFEED CONSUMPTION: (1991)

Category	Units	Australia
Pigs:		
Volume of product	'000T	312
Food conversion ratio	FCR	5.5
Stockfeed requirements	'000T	1,716
Poultry:		
Volume of product	'000T	424
Food conversion ratio	FCR	2.3
Stockfeed requirements	'000T	977
Eggs:		
Number of hens	'000	129
Kg feed p.a.	Kg	61
Stockfeed requirements	'000T	785
Total Stockfeed Requirements	'000T	3,478

Source: AMLC Stat. Review
ABS Cat. 7215, 71116
AAS derivations

AAS estimates total fat usage of up to 30,000 tonnes per annum in the intensive pig and poultry industries. Its use is highly variable, depending on grain prices, as the main energy source in feeds.

Of this total however, there is a significant proportion of poultry tallow, recycled fats and acid oils from refineries. The balance of 6,000 tonnes is estimated as tallow from the red meat industry. Tallow is currently only a minor component in stockfeed but has significant growth opportunities.

3.4.4 PET FOOD

Tallow is used in dry dog food. Estimates of the size of the dry dog food market is difficult to gauge, with 82,350 tonnes²⁶ being estimated as being sold through supermarkets alone.

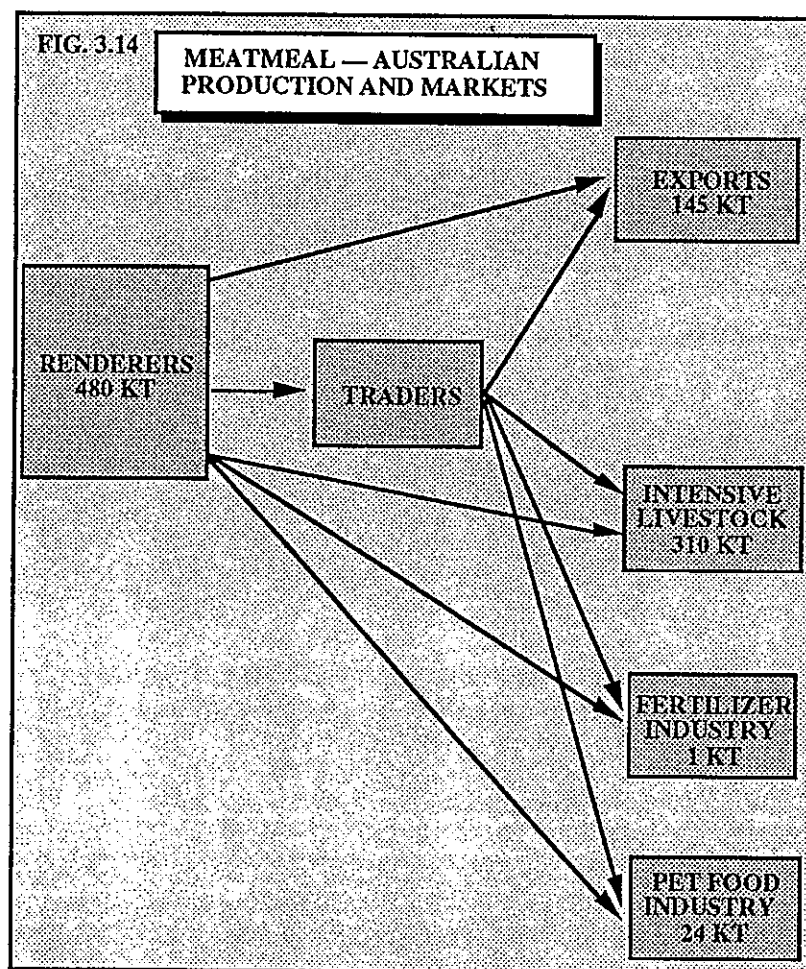
The two major manufacturers are Uncle Ben's (Mars Corporation) and Friskies Pet Care (Nestle) which have market shares of 51.4% and 32.3%, respectively²⁶.

AAS estimates that 12,000 tonnes per annum of tallow is used in the dry dog food market.

While this amount constitutes 15% of the final product, 25% of the value of the final product comprises the input of tallow. This signifies the importance of tallow as an energy requirement in the product.

3.5 KEY END-USE MARKETS — MEATMEAL

The total Australian production of meatmeal in 1991-92 was 479,973 tonnes²⁷. Of this amount, 30%, or 145,377 tonnes²⁷ was exported and the balance used domestically. Industry estimates are illustrated below in Fig. 3.14.



²⁶ Retail World, 1992

²⁷ ABS Cat. 83590

The largest usage of meatmeal domestically is in the intensive livestock industries, particularly in pig and poultry feeds. This equates to approximately 92% of usage. Meatmeal is also used in dry pet food and to a minimal extent as a fertiliser (blood and bone) mainly in the home garden use.

3.5.1 INTENSIVE LIVESTOCK

Stockfeed manufacturers use a wide range of ingredients to blend into livestock feed. Formulated rations are largely produced with the aid of least-cost programming techniques that are based on:

- the nutritional characteristics of the raw material
- quantity, quality, availability
- delivered price

These highly sophisticated formulation programs are leading to higher demands for consistency and predictability of raw material inputs.

The range of ingredients has widened in recent years offering increasing flexibility in ration formulation. The range of protein meals that may be used is large (see 5.1 for a complete list).

The intensive livestock industry is primarily about protein manufacture for human consumption. The task of the nutritionists in this sector is to provide amino acids in the appropriate proportions with the correct balance of energy to drive the process.

Meatmeal is one of a number of protein sources for the livestock industry.

In balancing rations, the amount of protein, its digestibility and balance of essential amino acids are critical factors that must be considered.

The intensive pig and poultry industries have historically used the majority of protein meals in Australia. Similarly, it is the development of the intensive livestock industry that has underpinned the demand for meatmeal.

Meatmeal is a major ingredient in pig and poultry diets. It is also used in ruminant diets but only to a limited extent. There are opportunities to expand usage with cattle feeding.

Approximately 85% of total stockfeed consumption is in the pig, poultry and egg industries.

The intensive stockfeed industry consumes the majority of the meatmeal produced in Australia. AAS estimates that approximately 310,000 tonnes of meatmeal is consumed. This represents a usage rate of around 9% in pig and poultry diets.

3.5.2 PET FOOD

As with tallow, meatmeal is used in the dry dog food market segment. AAS estimates that approximately 24,000 tonnes per annum of meatmeal is used in the dry dog food segment.

Meatmeal comprises approximately 20% of the retail value and 20% of the weight of the end product.

3.5.3 FERTILIZER

Meatmeal is rarely used as an agricultural fertilizer. This is reflected in the fact that blood and bone is usually the most expensive fertilizer. At approximately \$400/tonne in bag it is significantly more costly than a complete organic fertilizer of around \$330/tonne.

Nevertheless, blood and bone is occasionally used by vegetable growers to establish the vegetables in the early growing stage, after which a complete organic fertilizer is used.

Blood and bone is used to a greater extent in the garden market.

Major producers are Yates and Defender. The garden fertilizer industry is worth \$70.3 million per annum²⁸

4.0 TRENDS IN KEY INDUSTRY SEGMENTS

4.1 SUPPLY

4.1.1 ABATTOIR RENDERERS

The future of abattoir renderers is highly dependent on the operations of abattoirs themselves.

During its inquiry into the meat processing industry in 1982, the Industry Assistance Commission (IAC)²⁹ found that the average processing costs of large abattoirs (processing greater than 200,000 cattle equivalents) were 25% lower than small abattoirs. Therefore the trend towards a significantly concentrated slaughtering industry is a likely outcome.

Regulations have, to some extent, inhibited change in the structure of the abattoir industry. The licensing authorities in New South Wales, Queensland, Victoria and Western Australia in the 1980s effectively adopted a policy of zero capacity expansion for the slaughtering industry.

Victoria has the most fragmented slaughtering industry supporting an average production of 5kt of meat per abattoir, compared with NSW's 12.48kt and Queensland's 23.58kt³⁰. Industry sources suggest that an abattoir producing no more than 50 tonnes of red meat per week could not render at commercially viable levels³¹.

In recent years there has been concentration within the slaughtering industry through mergers and a number of abattoir closures. Industry sources indicate that in the United States, the number of operating rendering facilities in the past 20 years has fallen by more than 50%, from 800 to 336. Of these, 182 are independent renderers.

4.1.2 SERVICE RENDERERS

Collection services are very important in the maintenance of supplies to service renderers. They are in direct competition with offal collectors. Price is generally similar among competing collectors. Poaching of suppliers usually stimulates reciprocal reaction to preserve the supplier base.

Various interviewees indicated that prices paid for raw materials have fallen dramatically in the last two years from 25¢ to 10¢/kg as a result of the drop in tallow price.

Palm production is continuing to grow, with New Guinea and Indonesia now coming on stream. This increased production is likely to cause further deterioration of palm and tallow prices.

Butchers, supermarkets and boning rooms may have to start paying for the collection of raw material as a lower tallow price forces renderers to reduce costs.

The viability of service renderers that rely particularly on rendering as their core business may be threatened.

29 IAC, 1982

30 AAS Derived: AQIS, QLMA, Pers. Comm.

31 Pers. Comm. ARA

4.2 TRADERS

Historically, traders have played a vital role in bringing products to market. This has diminished in domestic markets. While many industry participants view traders as opportunistic, they nevertheless play an important role in stabilising prices within domestic markets by sourcing product during periods of irregular local supply.

The traders' biggest role is in providing export services, including storage, handling and market knowledge. Gardner Smith is the major exporter of tallow. Traders are likely to increase their influence if exports in tallow increase.

4.3 END-USE MARKETS

4.3.1 FOOD MARKETS

Worldwide, tallow is under increasing pressure within the edible oils market due to changing consumer demand. These trends are most dominant in the United States. The amount of tallow used in edible and food markets has declined in the United States to around 10% of total production³².

Tallow consumption post-war increased dramatically in the United States and Australia owing to the rapid growth in fast-food consumption.

More recently, the consumer perception that animal fat is unhealthy has been used by the fast-food industry in the United States as a marketing ploy.

The fast-food chains of McDonald's, Wendy's and Burger King have recently switched from tallow/cottonseed cooking oil blends to 100% vegetable oils for cooking their french fries. This directive has also been implemented in Australia.

Smaller, non-corporately owned restaurants, cafes and fast-food shops are not under the same pressure as the big chains. Here, tallow is valued for its distinctive flavour and stability and is usually lower priced.

In 1991, Hassall and Associates Pty. Ltd.³³ estimated that substitution of tallow by vegetable oils in the United States would equate to 190,000 tonnes per annum once all fast-food outlets have made the conversion. In Australia, the conversion would amount to an estimated 30,000 tonnes per annum.

The prevailing consumer trends have also permeated major food companies. Biscuit manufacturers that are large users of edible oils have, in the main, ceased to use tallow and are replacing it with palm oil blends.

The two major edible oil refiners and blenders in the Australian market are Unilever (EOI) and Goodman Fielder Wattie (Meadow Lea). These producers have not proactively decreased their usage of tallow, but rather, have responded to Australian consumer trends.

³² INFORM, 1992

³³ Grains 2000, 1991

Reductions in the usage of tallow have not been gradual. Rather, the falls have been somewhat sudden and large, owing to the extent of tallow's use by food processors. The major oil producers expect tallow usage to decline between 3% to 5% per annum with drops in the order of 20% occurring in any one year being quite possible.

The health arguments underpinning changing consumer trends are not all consistently agin tallow. Tallows can be refined, bleached and deodorised or can be modified by inter-esterification, fractionation, pasteurisation and blending. Tallows have a high content of saturated fatty acids and are not usually hydrogenated.

Tallow has a more positive outlook as polyunsaturated margarines are replaced by saturated margarines.

The National Renderers' Association (NRA) in the United States has identified such factors and has published promotional brochures on tallow³⁴. The NRA believes that it is possible to use its own health argument :

"Tallow hardens the product naturally so why not use natural hardening instead of hydrogenation?"

The NRA asserts that researchers have successfully stripped cholesterol from tallow. Further studies reveal that altering the fatty acid profile of edible tallow through modest fractionation and the addition of linoleic acid could result in a fat that would be more desirable than partially hydrogenated soya bean oil products now being used in the United States for deep-fat frying.

The CSIRO is also working on cholesterol and its role. Research into the removal of cholesterol from animal fats and fractionation/esterification techniques to produce a range of liquid oils is seen as having potential.

4.3.2 OLEOCHEMICAL AND SOAP

From 1976 to 1981 there was growth of 11% in soap consumption, an average of 2% per annum. In 1982, the market grew 13%, receded 6% in 1983, remained static in 1984 and resumed an average annual growth rate of 1.5%³⁵. Production in 1991-92 was 32,760 tonnes³⁶.

Usage trends for soap are relatively static, only increasing marginally in accordance with population growth. The only possible effect on the future rate of tallow usage will be the developments that occur with the specialist cosmetic soaps (like Dove). These are manufactured from petrochemical industry raw materials. If these products grow, there will be a corresponding reduction in the need for tallow.

Unlike their overseas counterparts, soap manufacturers in Australia are not switching to palm oil. Palm/vegetable oil based soaps are considered too dry, with differences in odour and colour. There is also a price advantage in using tallow for Australian manufacturers.

Unichema's substantial upgrading of its plant to world-class standards has lead to growth in oleochemical exports. Domestic markets are relatively stable.

34 INFORM, 1992

35 Brown

36 ABS Cat. 8362.0

4.3.3 INTENSIVE LIVESTOCK

In contrast to the past, the intensive livestock industry no longer aims to produce "fat" chickens and pigs. Rather it is striving to produce "lean" meat production (i.e., high-density protein). The driving factors behind this trend are two-fold:

- Consumer demands and health trends.
- The economics of livestock production. (It takes five times more energy to produce a gram of energy than it takes to produce a gram of lean.)³⁷

Other factors influencing stockfeed usage and rations in intensive livestock are:

- improvements in nutritional science
- improvements in genetics

The rapid growth of grain legume production in Australia has seen significant penetration of this crop into pig and poultry rations. This trend can be expected to continue and greater availability will result in greater price competition. The maximum usage rate of legumes in rations is 25% to 30% which is significantly higher than that of either animal or oilseed protein meals.

The increased production of legume-based crops has resulted in their greater use as a protein source by the stockfeed industry. This has impacted negatively on meatmeal usage.

Full fat oilseed usage within the pig and poultry industries is reported to be growing, particularly in areas where costs of other protein sources is higher.

Four of the essential amino acids required by pigs and poultry can now be obtained by the food industry in synthetic form. This trend may also threaten the protein meal price, if not the usage.

Pig Industry

Pig rations are usually formulated to meet the specific growth requirements of pigs at different ages. The overall aim is to maximise feed energy input into young pigs and reduce the level of energy as the pig matures so as to avoid excessive deposition of fat.

Digestible energy is critical with pig feed formulations. Highly concentrated forms of energy such as tallow are likely to be more important in future.

Ownership and control in the pig industry is becoming more heavily concentrated. Large intensive piggeries now account for up to 40% of total pig meat production in Australia. Such intensification of production increases demand for high-quality ingredients.

Australian pig meat production and consumption per head is shown in Fig. 4.1.

FIG. 4.1

**AUSTRALIAN PIG MEAT PRODUCTION
CONSUMPTION**

YEAR	PIG MEAT PRODUCTION '000T Carcase Weight	PIG MEAT CONSUMPTION kg/head
1983	247	15.9
1984	303.4	16.4
1985	268	16.7
1986	250.6	17.0
1987	288.3	17.3
1988	303.4	17.7
1989	310.1	18.1
1990	319.0	18.5
1991	315.9	18.2

Source: CSB, 1992

Notwithstanding a 28% growth in pig meat production over the years 1983-91, the relative importance of meatmeal has declined in pig rations.

Imports of pig meat is a current threat to the industry. The Australian pig industry is small compared to the European and Canadian industries. Historically, imports have been prohibited and managed through quarantine regulations. However, there is significant pressure emerging from these major producing countries to get greater access to the local market. In the event of increased imports, the demand for locally produced pig meat will fall, thus reducing the demand for protein and energy from this sector.

Broiler Industry

Broiler production has increased 37% over the last eight years. Trends of Australian production and consumption of poultry is illustrated in Fig. 4.2.

FIG. 4.2

**AUSTRALIAN POULTRY
PRODUCTION AND CONSUMPTION**

YEAR	POULTRY PRODUCTION '000 T. Dressed Weight	POULTRY CONSUMPTION kg/head
1983	316.4	20.4
1984	301.4	20.0
1985	348.7	21.8
1986	370.4	23.0
1987	385.4	23.5
1988	399.3	24.7
1989	410.5	24.7
1990	423.4	24.6
1991	433.5	25.1

Source: CSB, 1992

Growth in poultry production and consumption may be attributed to:

- changing consumer attitudes;
- availability of low-fat products;
- strong brand marketing by key poultry industry players (Steggles and Inghams, particularly);
- strong growth in the food service sector; and
- greater retail distribution access via the supermarkets.

The broiler industry is highly competitive and is characterised by cost efficiencies and fine profit margins. Gross profitability is highly dependent on volume (throughput).

Industry sources believe that, as with pig meat, imports represent a very real threat to the industry. With chicken, the threat may come from Thailand where processing labour costs are very low or, alternatively, from US-based processors servicing fast-food chain restaurants.

Egg Production

The egg industry is fragmented, consisting of numerous small and medium-sized egg producers. The potential for cost efficiencies, given the maturity of the industry and the near commodity status of eggs will, however, exert continuing pressure on the industry for greater concentration of ownership and control.

Consumption of eggs is declining (see Fig. 4.3) owing to changing consumer demand, particularly with respect to health perceptions and cholesterol.

FIG. 4.3 APPARENT PER CAPITA CONSUMPTION EGGS (AUSTRALIA)

YEAR	KG
1983-84	146
1984-85	143
1985-86	140
1986-87	138
1987-88	135
1988-89	128
1989-90	

Source: ABS Cat. 4306.0

Beef

The Australian feedlotting industry has expanded significantly in recent years and with it, the need for high-performance rations.

Rumen bypass proteins are considered important protein sources. The feedlotting of cattle does not require high levels of quality protein. Whole cottonseed is being increasingly employed because whole cottonseed can provide the necessary protein together with oil and fibre content at a relatively low price.

Concerns in relation to the management of Bovine Spongiform Encephalopathy (BSE or mad cow disease), a major problem in Europe and the United Kingdom, but unknown in Australia, may result in a strong lobby against the use of meatmeal in any bovine rations. Some members of the Australian nutritional profession strongly hold the view that because so little is known about the virology of BSE a no-risk strategy should be adopted with regard to Australian beef and dairy herds.

Trends in the US industry has seen the inclusion of tallow at rates of 3% to 4%. Use of tallow by Australian feedlotter is increasing, especially with high mineral content supplement pellets. It is also used as a direct additive to feed at the feedlot, where it is applied at rates up to 4%. This is the current maximum level perceived for palatability reasons. Industry sources forecast greater use of tallow in feedlots within three years, where facilities to handle it are warranted (say greater than 10,000 head units).

Dairy

Although meatmeal is used widely within the dairy industry in the United States, its use in Australia has been hampered by lingering concerns over the problems associated with Salmonella and BSE.

4.3.4 PET FOOD

Dry pet food (dog and cat) has increased production from 116,300 tonnes in 1981-82 to 139,200 tonnes in 1986-87, a 20% increase³⁸. Estimated production is forecast to reach 192,500 tonnes by 1999-2000. This represents a small but significant growth market for meatmeals and tallow.

4.3.5 OVERSEAS MARKETS

The export markets will remain critical to the rendered offals market. However, competition from substitute oils and protein sources will intensify.

Given the increasing competition from palm oil, the outlook for tallow is poor if it is merely traded as a commodity. If traded, however, as oleochemicals, greater prospects may exist.

Significant opportunities may emerge as the larger Asian countries improve their standards of living. This will result in improved demand for tallow and palm oil for soap production. There are also opportunities for greater exporting of soap products to the Gulf States, where soap production is in its nascent stages.

38 Grains 2000, 1991
(Australian Wheat Forecasters, P. 292)

The world market for tallow for the soap industry has been diminished by the Indian government's ban on imports of animal fat in 1983.

China and the rapidly growing economies of Asia also provide a growing market for frying oil. In countries such as Bangladesh, solid white fat is closely associated with ghee, the preferred cooking oil used in baking as well as a frying fat.

The countries of Eastern Europe and the Commonwealth of Independent States will also provide opportunities for edible tallow. In these nations, cholesterol is not a consumer concern.

5.0 INDUSTRY LEVEL COMPETITOR ANALYSIS

5.1 OVERVIEW

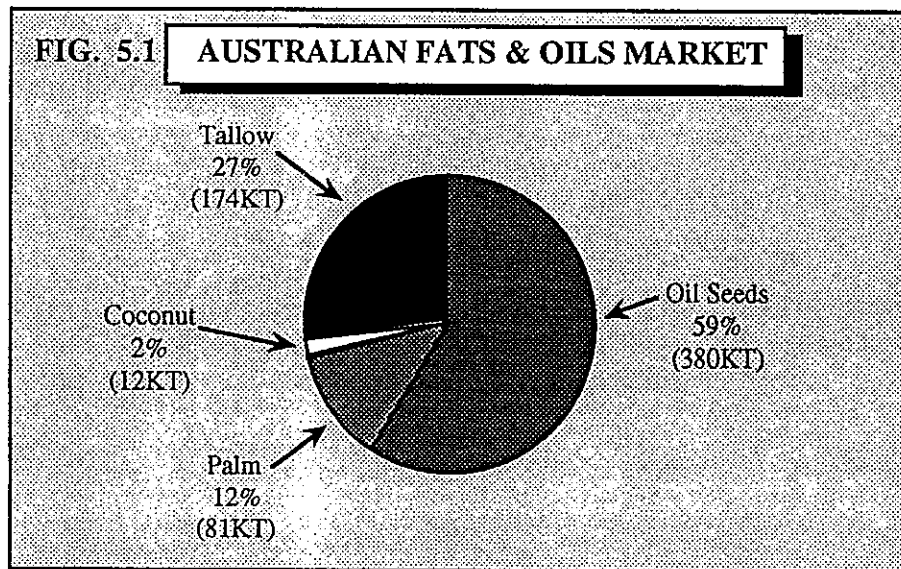
In the context of this market study, meatmeal and tallow are ultimately being considered in relation to the market sectors they supply and in which they compete. The two market sectors are

- the fats and oils market
- the proteins (nutrients) market

5.1.1 THE FATS AND OILS MARKET

It is possible to derive tallow's market share versus its other major product competitors in the Australian domestic market for fats and oils.

Based on 1990-91 data, the relative market shares by volume are shown in Fig. 5.1 below.



Sources: Grains 2000, 1991
Comm. Stats 1991, AAS derived
ABS Cat. 5464,
Australian Bureau of Agricultural & Resource Economics (ABARE)
AAS imputed

The greatest proportion of the market is supplied by oilseeds.

Tallow's share of the market is 27% down from a peak in 1989-90 when it reached 219,000 tonnes³⁹, or an estimated 36% market share. Its market share and volume have continued to decline in the domestic market.

5.1.2 THE PROTEIN MARKET

There are a wide range of products that compete in this market. The following is a list of potential contenders:

Animal Proteins

Meatmeal
Blood Meal
Poultry Offal Meal
Fish Meal
Feather Meal

Vegetable Proteins

Soya bean Meal
Sunflower Meal (2)
Cottonseed Meal
Canola Meal
Safflower Meal

Legumes

Field Peas
Lupins
Chickpeas
Beans (various)

Extruded Full-Fat Soya beans
Extruded Full-Fat Cottonseed

Market share determination is difficult to assess in the protein meal market. The various alternative products are difficult to directly compare on a volume basis due to their varying levels of protein and varying contributions of other nutrients.

We have compared the dynamics of each product over the last five years especially within the Australian domestic market. Details of each are shown in Fig. 5.2. Only major products are shown.

FIG. 5.2. AUSTRALIAN PROTEIN MEALS AND LEGUMES APPARENT DOMESTIC CONSUMPTION (KT)

	Meatmeal (1)	Oilseed Meals				Legumes	
		Cotton Seed (2)	Soya	Canola	Sun- flower	Peas (3)	Lupins
1986/87	288	152	120	18	76	—	—
1987/88	197	200	95	15	119	226	344
1988/89	311	193	207	13	95	271	479
1989/90	401	248	80	17	51	157	328
1990/91	379	310	164	26	102	157	428
1991/92	371	345	98	90	50	410	490

□ indicates year of peak usage.

- Sources: (1) ABS Cat. 8359
CSB, 1992
AAS derived
(2) ABS Cat. 5464.0
AAS derived
(3) Agriculture & Resources Quarterly, 1992

The peak use of meatmeal was in 1989/90, whereas with cottonseed meal, canola meal, peas and legumes, all have been growing rapidly over recent years. Poultry offals are not measured separately in the statistics.

5.2 OILSEEDS

Oilseeds constitute 59% of the Australian fats and oils market. Oilseed meals in total volume are more significant than those of meatmeal.

The oilseed industry considers both oil and meal markets in decision making and therefore produces two co-product groups. These two distinct markets have been considered together to preserve their perspectives.

5.2.1 PRODUCTS

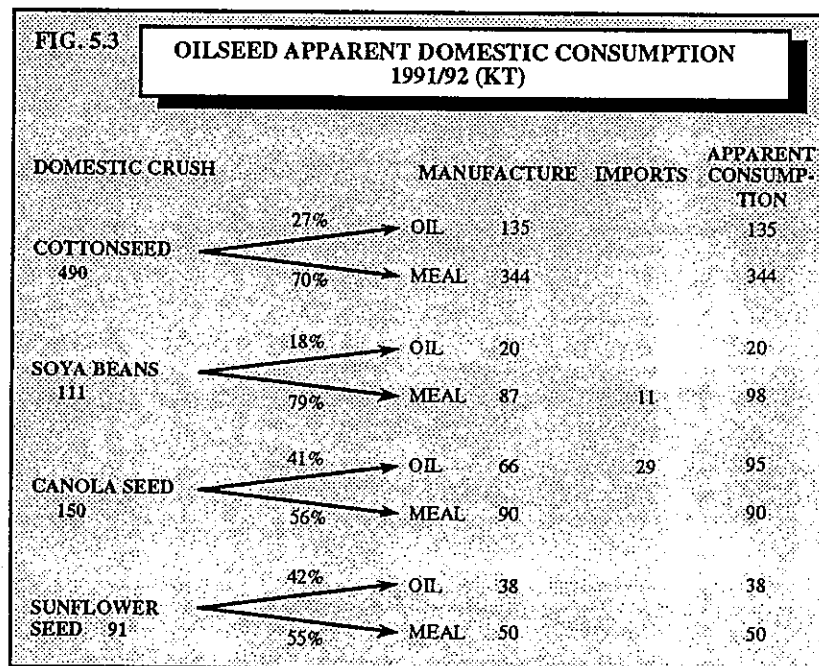
The oilseed industry produces a range of products suited to different applications within the fats and oils markets.

Products for human consumption include soya, cottonseed, canola, and sunflower. Some of these products also have applications in industrial markets along with crops grown specifically for industrial applications (e.g., linseed). They have their industrial uses as lubricants, hardeners and additives. Meals produced from each seed have their own distinctive nutritional characteristics and therefore their own usage pattern.

5.2.2 SIZE AND DYNAMICS

Australian production of oilseeds was 1,084kt in 1991-92⁴⁰. Production tends to vary with seasonal conditions, particularly sunflower in Queensland. Production of cottonseed and canola are growing rapidly, while declining for soya beans.

There are significant exports of cottonseed and sunflower when seasonal production is high and exceeds domestic demand. Imports of Soya bean are significant and recently have exceeded domestic production. Diagram 5.3 below illustrates the components of apparent domestic consumption.

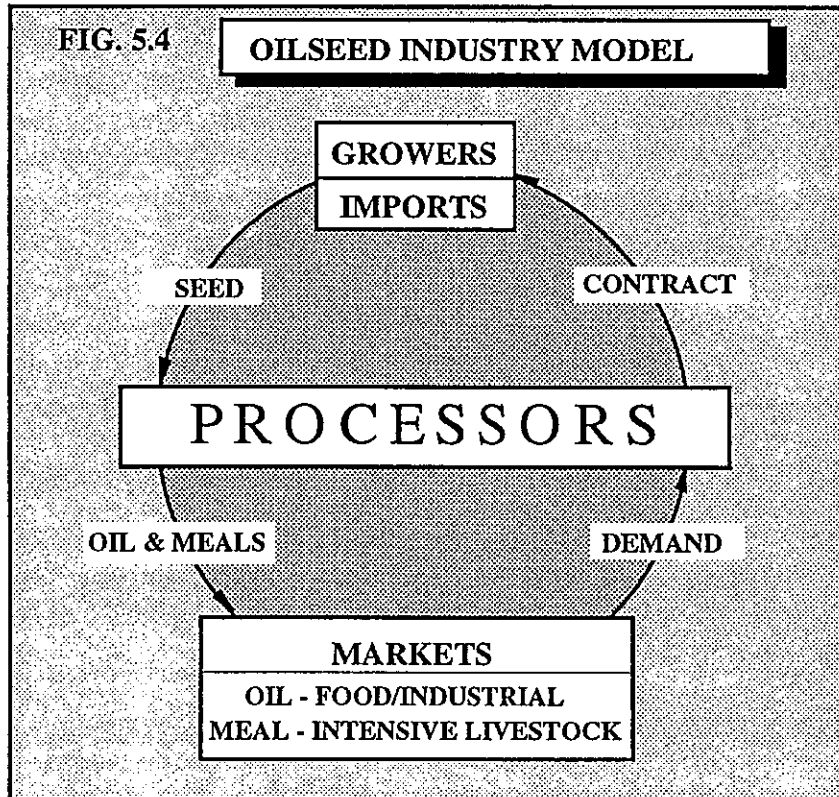


Source: ABS Cat. 5464.0
CSB, 1992

5.2.3 MODEL

This industry has grown rapidly, strongly influenced by its markets. Growers are generally contracted to grow crops by processors rather than growing them 'on spec' (as in the case of meat). Processors play the role of facilitating between markets and growers. In essence, they do not produce without known market volumes and prices.

The links between grower, processor and markets can be illustrated in an industry model, as follows:



5.2.4 PROCESSORS

Processors see themselves as the link between markets and growers.

Currently, the largest is Cargill, which crushes about two-thirds of the crop and has plants in NSW and Victoria. Cargill is an international operator based in the United States, with large oilseed and meat operations (it is the second largest meat packer in the United States). In Australia it also has interests in meat, with an abattoir at Wagga.

The second operator is Continental Grain, which is in the process of merging with Cargill. The combined operation will crush about 85% of the Australian crop.

Smaller processors are Seedex in South Australia and Riverland Oilseeds at Numurkah, Victoria, owned by Gardiner Smith. A new plant is proposed to be built at Dalby.

5.2.5 MARKETS

Oil is extracted for food and industrial markets. End products in the food industry include margarine, salad oils and cooking oils. Major companies that refine, process and pack products for end-markets include Meadow Lea (Goodman Fielder Wattie), EOI Foods (Unilever) and Peerless, which mostly refines.

They have their industrial uses as hardeners, paints and additives and in specific products such as linseed oil.

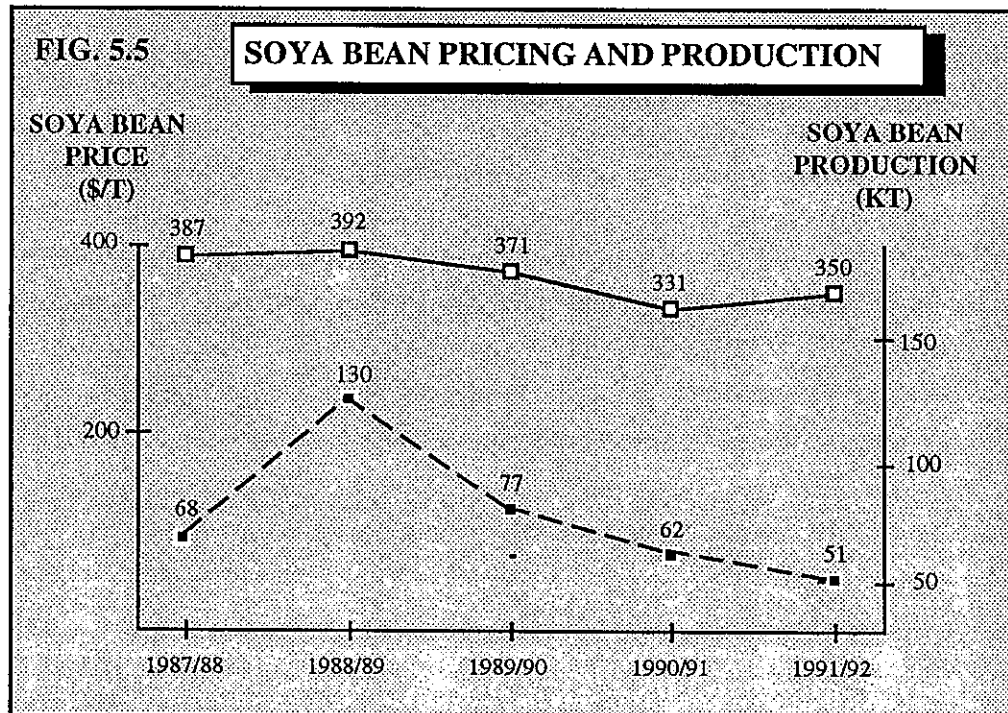
Meals are marketed to the intensive livestock industry where they contribute a vital role.

5.2.6 PRICING

Meals and oils are both vital components in the crushers' decision-making process. Prices and volumes achievable in the market place are factored into the equation and after deducting processing costs, a farm price can be determined. The price must be worthwhile for farmers to grow the crops, compared with the alternatives available to them.

The system is iterative and ultimately reflects a balance. Essentially there is little or no seed grown speculatively.

The production and price of soya beans over recent years has tended to reflect this approach. A fall in price is mirrored by a production drop. This is illustrated in the following graph.



Source: ARQ
ABS Cat. 7330.0

The industry operates on contract periods, often of 12 months duration.

5.2.7 MARKET INFLUENCES

There are several factors likely to affect markets in the future:

- Peas and lupins are being grown widely in southern Australia and to a smaller extent chickpeas in Queensland. These reduce the markets for protein meals. (See 5.4 for further details.)
- The system is market driven and growers and processors react accordingly - ultimately growth in the market determines what growers and processors do!
- There is a trend toward processing of full-fat oilseeds for direct inclusion into stockfeeds. There is no official data available on the size of this market.
- Cargill, as the major processor of oilseeds, is clearly market-focused - it has a strong quality focus on its markets' needs expressed by their definition of quality as "conforming to requirements, not to goodness".

5.3 PALM OIL

5.3.1 PRODUCTS

Palm crude is produced as the initial processed product. It can be used directly as an industrial lubricant in processes such as tin-plate manufacture (rolling).

For use in edible applications, palm crude is refined into palm stearin and palm olein. These two products have different characteristics highlighted by their different melting points.

Stearin is a solid at room temperature and melts at 50°C. It can be used in meat pie casings, solid bread fats, and other heavy pastry products. It is the closest product physically to tallow.

Olein is normally a liquid with a melting point of 24°C. It is used commonly as a frying oil.

Often, blends of stearin and olein are used to achieve the required melting point for a particular need.

Palm kernel oil is obtained from the kernel and has specific uses in products such as dairy formulations and whips, biscuit creams, etc.

Palm kernel oil has been used occasionally in soap manufacture as a substitute for coconut oil. Palm stearin has generally not been used for soap manufacture as producers prefer to use tallow, and within Australia, palm products are generally price competitive.

5.3.2 SIZE AND DYNAMICS

The use of palm products in Australia has been relatively static over the past five years at 12% to 14% of the domestic fats and oils market⁴¹.

Palm kernel is used in very small quantities and is less than 1% of the domestic market. It has specialised uses as referred to in 6.2.1. It is not in direct competition with tallow.

Palm stearin use has been 3.5% to 4.0%⁴¹ of the domestic market over the last five years. Its use appears to be static or declining.

Palm olein, however, appears to be growing in volume, having reached 8.7% market share in 1990-91 compared with 4.5% share in 1987-88⁴¹. (Unfortunately ABS does not appear to have collected palm olein import statistics since 1986-87).

Industry information indicates that palm olein is important in the frying oil market where there has been a decline in the use of tallow.

5.3.3 PRICE

Palm's greatest influence within the fats and oils arena is its potential to displace tallow from international markets. With the price of tallow strongly linked to the export price for palm, the effect of palm will ultimately be to reduce the price to tallow producers.

5.4 GRAIN LEGUMES

5.4.1 PRODUCTS

Grain legume production includes lupins, field peas, chickpeas, faba beans, mung beans and navy beans.

The most significant of these products competing with meatmeal in the protein meals market are peas and lupins in southern Australia and chick peas in Queensland.

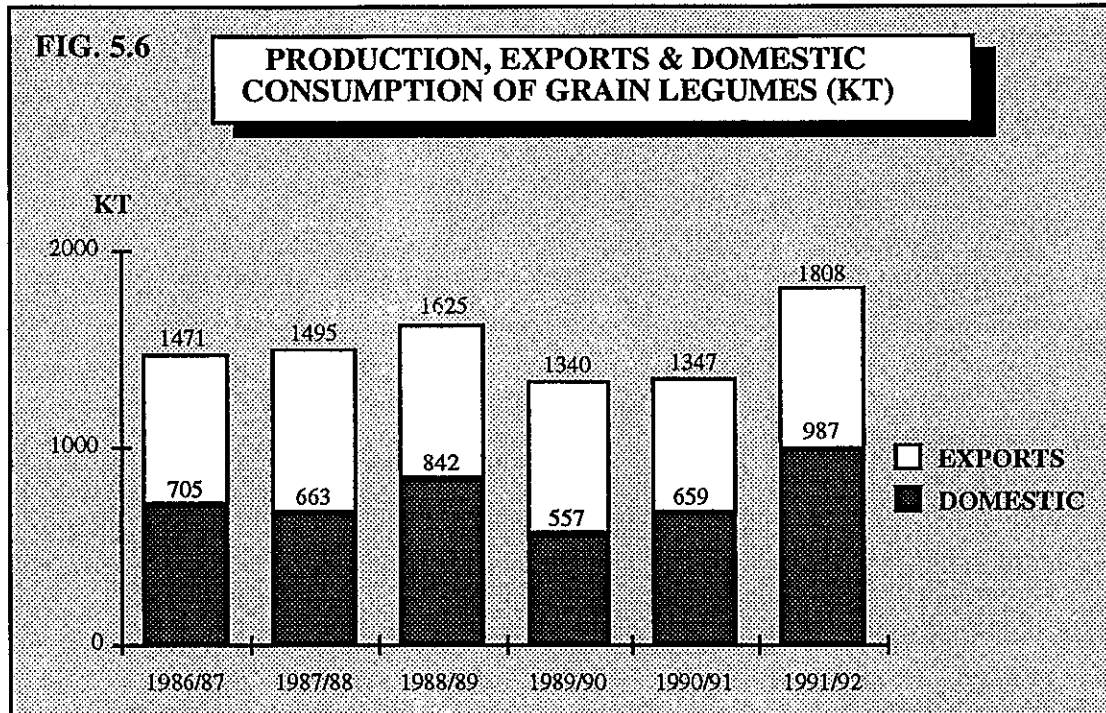
They are included in intensive livestock feeds because they provide a good source of protein and energy.

Many of the grain legumes are also grown for human consumption.

⁴¹ Refer Fig 5.1 for sources

5.4.2 SIZE AND DYNAMICS

Grain legume availability and use has expanded rapidly in recent years. The following chart shows production, exports and domestic consumption over recent years.



Source: CSB, 1992

Production varies depending on seasonal conditions both in southern Australia for peas and lupins and in Northern Australia (Queensland) for crops such as chickpeas.

Exports have accounted for significant volumes but domestic use has grown rapidly over the last three years.

5.5 RECYCLED FAT

In the United States, recycled fats are known as yellow grease and approximately 95% is recovered. It is also used in animal feed and pet foods as a source of energy.

Yellow grease is also used in the United States as a source of fatty acids and as a dilutant in higher-grade inedible fat products.

In Australia, the industry estimates that currently only 50% of food service frying fat is recovered. It is often not cost effective for recyclers to pick up from small establishments.

The quantities of tallow to be recycled can be expected to increase over the next few years. The impetus will be two-pronged. Firstly, the food service market is projected to grow to \$4.4 billion by 1995⁴² and approach 30% of food sales (from \$3.7 billion and 22% in 1991-92).

Second, and more immediately, from January 1993 all restaurants in NSW will be required to be registered with the EPA and will have to employ registered contractors to dispose of both used frying oils and grease trap waste.

Logically the legislation will flow to other states and will dramatically increase the amount of fat collected. Stricter legislative controls will force collection contractors to upgrade their equipment and thereby eliminate the small operators.

AAS estimates that around 44,000 tonnes of deep frying fats, comprising both animal and vegetable-based oils are used in the food service sector.

Industry estimates indicate that about 15% is lost in the recycling process. The amount of recycled fats from the food service industry is currently estimated at approximately 20,000 tonnes. If 100% was collected, a possible 40,000 tonnes could be produced.

This would provide increasing competition for virgin tallow in both the pet food and stockfeed industries.

5.6 POULTRY OFFALS

We have separately considered poultry rendering because it is not part of the meat industry serviced by the MRC.

5.6.1 PRODUCTS

Products produced include feathermeal, poultry offal meal and poultry tallow. These products are prized raw materials for some users, particularly by integrated poultry producers and pet food industries.

Features of the products include their consistency, high digestible protein (meal around 65%) and their bland flavour.

5.6.2 PRICING

The products are strongly in demand from poultry producers and pet food manufacturers. Production is limited and therefore encroachment on the protein meals market is restricted.

Many of the large integrated poultry processors re-use these products into their own feed regime, further reducing the amount available within the free market.

6.0 END-USER MARKET PERSPECTIVES

6.1 FOOD

6.1.1 QUALITY

The specification requirements of edible tallow are critical for end-use markets. The important characteristics are free fatty acids (1% maximum), colour (so that bleaching is unnecessary) and freshness.

Many of the edible tallow users purchase lower grades and convert to the quality required. Bleaching is used to improve colour and products can be improved by refining and deodorising.

Many of these processes would not be required if quality management at renderer level was improved. Often, significant deterioration occurs owing to excessive delay in processing raw materials.

“Quality management within industry is not good.”

There is opportunity to differentiate products by streaming to better meet market needs. This would require differentiating raw materials by source, process, species, etc.

A significant advantage that tallow has over the frying oils is, particularly, the taste imparted to food cooked in tallow.

“The Australian public is well acquainted with the edible tallow taste.”

The Australian consumer has become accustomed to this taste, so the decline in tallow use is slower than it might otherwise be.

Consumer health concerns regarding cholesterol and saturated fats have led to a sizeable change to vegetable-based fats over the past two years with large food processors making the change quickly to satisfy customer preferences.

6.1.2 VALUE

The price of tallow sold for edible purposes is affected by:

- where it is used and the proximity to suppliers;
- international market influences;
- the value of the Australian dollar;
- seasonality - production peaks occur in Queensland during winter and Southern Australia during summer;
- demand levels that peak in winter due to higher consumption of fried food and pastry products; and
- quality.

The improved availability of palm oil, especially in the Australian market, and the ability, generally, to contract set prices ahead affects the value of tallow. Tallow is usually priced on a monthly “spot” basis .

The monthly tender system is not seen as ideal in developing appropriate supplier relationships.

“Purchase of tallow is as a traded tender - it is not objective or fair.”

Purchasers of edible tallow see themselves as price takers, while also having to negotiate availability at the same time.

“Do they (meat industry) sell it or do we buy it”

Soft oil suppliers, in particular, Cargill and Continental, provide excellent technical support for their products. There is no such service available from tallow suppliers.

Tallow users have developed their own technical skills and research base to service their markets and to compensate for the lack of support from tallow suppliers.

A good example of the support given by soft oil suppliers involved a large biscuit manufacturer that wanted to rationalise its fat usage from at least 12 different fats to one. The manufacturer's fat supplier successfully developed a multi-purpose product to service the bulk of its needs. The product is vegetable oil based. The change represented 10,000 tonnes per annum of fat. It is this type of service and support that drives industry change.

Offsetting the change to vegetable-based fats is the fact that tallow is cheaper. This positive factor tends to slow the rate of change.

6.1.3 DISTRIBUTION

Reliability of supply and spread of delivery are both important factors for tallow users. The improved availability of palm oil in the Australian market has allowed it to compete effectively as a direct substitute for tallow.

In most cases, only small stocks of raw materials are held by tallow users (usually a maximum of two weeks). This is driven by both quality and inventory management needs. Supplier support and response to this inventory management is critical.

6.1.4 MARKETING

The attitude of renderers to their markets and customers is generally regarded as poor, especially when compared against the service provided by competitors in vegetable-based oils.

In the case of the major participants in the edible fats and oils market, EOI and Meadowlea, neither have ever been surveyed by their suppliers.

6.2 OLEOCHEMICALS AND SOAP

6.2.1 QUALITY

There are significant differences in the quality requirements of different soap manufacturers. Generally, smaller manufacturers require higher quality to suit production processes that are less sophisticated.

Very small manufacturers will tend to accept only an edible grade of low FFA (1% maximum), with good colour (to avoid the need to bleach), and from specific species (usually beef).

Larger manufacturers' needs will vary according to their process. Some use edible grades and others poor and variable. Unichema is a specialist refiner producing, amongst other products, soap noodles for a sister division, Rexona/Lever and Kitchen.

It is generally easier to make quality soap from the higher grades of edible tallow, which may require less bleaching to achieve colour specifications.

One manufacturer prefers wet rendered tallow but has difficulty purchasing it because of the demand from human food manufacturers.

The direct costs of bleaching were estimated by one manufacturer at \$7/tonne for edible grades and up to \$16/tonne for gut tallow. This indicates that there is a cost premium of \$9/tonne for edible grade on colour parameters alone.

The species origin of tallow is also an important factor. Generally, tallow with high mutton content is not satisfactory for most soap manufacturers. Some demand pure beef tallow and others, requiring larger volume (and not able practicably to demand pure beef), limit the inclusion of mutton to a maximum level (in this case 20%).

One rationale is that mutton tallow produces harder soap.

Another is that tallow with high mutton produces an odour, potentially masking fragrances added to toilet soaps.

"Fragrances permeate out of soap ... mutton has an odour which can mask our fragrance integrity."

The presence of mutton tallow becomes an issue, therefore, as soap ages. Manufacturers forced to use some mutton tallow maintain strict control over inventories. Unfortunately they cannot control the age deterioration once in the hands of the consumer (or indeed, to some extent, of the retailer).

Contaminants in tallow are a problem particularly with large manufacturers. The most concerning of these is polyethylene which originates from meat wraps, packaging and protective clothing widely used in meat processing. These are invariably thrown into the scrap bin and hence collected by renderers.

Polyethylene has a very similar melting point to tallow making it difficult to separate. It can "plaque" processing plants creating a major blockage problem over time.

Coconut oil is generally the other major ingredient used. Its purpose is to give soap the ability to lather. It can be substituted with palm kernel oil purely on a price basis.

The general attitude towards quality (conformity to user needs) by the rendering industry is typified by a negative response to a manufacturer's request that "certificates of conformation" to specifications be provided with every load.

Such requirements are now commonplace within manufacturing and a fundamental precursor to being world competitive.

Palm kernel/coconut oils used widely in the industry meet such requirements, despite the difficulty involved due to the bulk distribution system used and long supply line.

6.2.2 VALUE

Price is usually defined on a monthly basis. The short nature of the price arrangements are not preferred by soap manufacturers. One manufacturer stated that he received no response to an offer of sole supply for an extended period (12 months) against a negotiated pricing arrangement.

Although single species tallow is preferred, it is practicably not always available, especially in Victoria. Soap manufacturers would, however, not be able to justify a large premium for single species tallow.

Tallow has a price advantage within the Australian market over palm oil (the soap raw material commonly used in Asia) due to distribution savings and parity pricing on the international market.

Tallow also has a shorter storage life than palm and this lowers the price achieved in the marketplace.

Unichema as a refiner and supplier to Rexona/Lever and Kitchen can utilise poorer quality fats, unlike other soap manufacturers. It is unlikely that other manufacturers could emulate Unichema's position due to the very large volumes needed for economic refining. Unichema has invested heavily in recent years and now has a world-competitive plant. They export about half of their products.

6.2.3 DISTRIBUTION

Most soap manufacturers prefer to deal directly with renderers. In fact one manufacturer, after making a decision to deal exclusively with a trader, reverted for quality reasons to purchase the majority of supplies from a renderer.

Traders are used for top-up supply — the supplier of last resort.

“We use traders to top-up requirements not available from manufacturers.”

Traders are recognised, however, as creating price stability between seasonal production variations in northern and southern Australia (winter versus summer peaks respectively). They also act as a monitor of international prices, tempering local supply/demand forces accordingly.

In order to preserve quality, regular deliveries are preferred. One manufacturer who has recently relaxed quality needs (from edible max. 1% FFA to max. 3% FFA) demands daily deliveries to suit production schedules and to guard against further deterioration (especially in warm weather).

Most will use more than one supplier to safeguard against load rejection or inability to supply the quantity needed.

6.3 INTENSIVE LIVESTOCK - MEATMEAL

6.3.1 QUALITY

The most important issue to emerge from the stockfeed industry was the relative inconsistency of meatmeal.

"Meatmeal is the most variable raw material we have."

"We (have come to) expect meatmeal to be variable in quality; the price of meatmeal is discounted because of its variability."

"If stochastic-based formulation techniques were adapted, the effect would be a further devaluation of meatmeal relative to other protein sources."

"With oilseed meals we don't have to worry."

The intensive livestock industries are increasingly becoming more exacting in nutritional needs, driven by the consumer's desire for low-cost, lean white meat. Levels and densities of nutrients are measured at the micro level (e.g., amino acids not protein). The balance of various ingredients is also essential — e.g., calcium/phosphorous ratio is critical. To achieve feeds of known nutritional characteristics, raw materials of consistent quality are essential.

Variability in amino acid levels in Australian meatmeals is best illustrated by a recent trial conducted by Degussa. A selection of commercial samples (28) were provided by several large stockfeed companies. Levels in the meatmeal samples of the three most critical amino acids, Lysine, Cysteine and Methionine, were measured and compared with samples of soya bean meal. The results are illustrated in the following table. The Co-Efficient of Variation in ammonia acids is much greater for meatmeal than the results are for soya bean meal.

FIG. 6.1

	Meatmeal			Soya bean Meal		
	Min %	Max %	CV	Min %	Max %	CV
Lysine	2.17	3.09	7.23	2.60	2.85	2.80
Methionine	0.58	0.83	7.17	0.62	0.66	2.65
Cysteine	0.36	0.97	31.68	0.64	0.70	2.62
Met & Cys	0.96	1.67	15.04	1.27	1.34	1.93

Source: Degussa, 1992

Nutritionists using such data must assume the lowest level, otherwise they risk under-specification in the finished feed.

The inherently variable production process is also of concern to some nutritionists. Meatmeal manufacture in abattoirs early in the production day has high levels of raw material from the kill floor — later in the day, a higher proportion of fat, trim and bone from boning rooms is common. Variable raw material increases the chance of inconsistency in stockfeed.

This variability is a significant risk when judged against the small quantities of feed consumed. This risk is greater with higher protein “starter” and “chick” feeds where daily feed consumption is small per animal.

Meatmeal from multi-species plants are a concern due to the differing nature of raw materials (pigs/sheep/cattle/deer/other); varying production schedules (pigs followed by mutton on one chain) and the mix of various animals killed each day. Such inconsistencies make the product inherently more variable. Specialised plants (e.g., beef or chicken) produce much more consistent products.

A frequent suggestion was that predictability was more important than the level of protein and that a consistent product was worth a premium.

Physical characteristics of meatmeal are critical.

“Bone chips in meatmeal these days are a disgrace.”

Particle size (bone chips) and the presence of excessive wool and/or hair both create significant difficulties in processing, including damage to pelleting equipment. In one particular case, we were shown a sample which was described as “disgraceful”. The user believed they had no alternative but to use this product, due to shortage of raw material.

Where fat content is excessive, the material is difficult to handle. This can be due to “bridging” (the aggregation of the meal preventing free flow) in bulk silos and/or lumps which block processing and bulk handling equipment. Storage life of meatmeal is often a concern.

“Addition of anti-oxidant to meatmeal to stabilise the product would help greatly - it’s always used in poultry by-product meal.”

Another issue of concern for stockfeed users of meatmeal was the relative availability of the animal of key nutritional components. This is often described as digestibility (the proportion of a nutrient that is digested, as measured by gross intake minus faecal content).

Factors that affect digestibility include processing temperatures and the presence of materials which might chemically bind valuable nutritional components. The latter is believed to be a problem when paunch contents are included in render raw material. Excessive sugars are believed to bind with lysine, effectively reducing its availability to the animal.

Major meatmeal contaminants are a real concern to the intensive livestock industry. The most public of these is salmonella which has been a major issue overseas, particularly in the United Kingdom and the United States.

In Australia this issue is important. Intensively produced livestock has a heightened risk of contamination through to the human food chain. Stockfeed (and meatmeal) is an ideal breeding medium and although the heat of rendering and steam pelleting of stockfeed destroys the organism, there is the ever-present risk of recontamination and flow into the food chain.

Both major poultry producers, Inghams and Australian Poultry, are concerned enough to warrant protecting their primary grandparent breeding stock by using special disease-isolated facilities, and providing feed from a mill that does not use any animal-based by-products. Whether this might spread to multiplier flocks and eventually production flocks is not determined.

“Salmonella - it only needs an example for it to happen (be a major industry problem). Using an inhibitor is the only answer.”

A further concern which may discourage use, is that of disease in general. Apart from Salmonella, such exotic diseases as bovine spongiform encephalopathy (“mad cow disease”) have been a problem overseas. Some industry experts believe there should be no use of meatmeal permitted in beef feeds while a risk of disease spread remains.

There is also a general concern about contamination by foreign objects. Implicit in this concern is the view that the meat industry regards rendering as a necessary waste treatment process rather than as the production of a raw material valued by the intensive livestock industries.

“The meat industry is doing itself a disservice by not having properly developed product specs.”

The lack of industry-based specifications has been a historical problem. This problem, however, is being addressed currently at the instigation of the Stockfeed Manufacturers Association and not by the Australian Renderers' Association.

6.3.2 VALUE

The value of meatmeal to the stockfeed industry is superficially its cost per percentage of protein. However, there are other major influencing factors that ultimately determine its level of usage.

“There is little or no awareness or interest in calcium or phosphorous and its relevance to intensive livestock.”

Perhaps the major one of these factors is Phosphorus in combination with an economic level of protein. Australia is a phosphorus-deficient country and most other feed ingredients lack sufficient levels in an available form to sustain animal growth (including other protein meals).

Rock phosphate is cheaper and readily available but is poorly digested. Vegetable oilseed meals are low in available phosphorus, although there is now technology which might improve this factor.

The most digestible form of phosphorus for stockfeed supplementation, dicalcium phosphate (DCP), is expensive.

An important factor in the usage of meatmeal is the calcium/phosphorus ratio. When the calcium level exceeds a 2:1 ratio with phosphorus, additional DCP may be required to maintain balance, even if the phosphorus level is initially adequate.

It is possible to formulate feeds without meatmeal. There is currently a cost penalty in the order of only 6%, which serves to illustrate the fine cost/value balance.

Another value component in protein meal usage in stockfeed is risk aversion. It is common for stockfeed users to purchase from 3 or 4 suppliers to spread risk. Competing products such as oilseed meals are contracted 6-12 months in advance, based on known supply, availability and price. In an industry that is managed on a medium- to long-term basis, the monthly renegotiation of supply and price is a negative factor. As one stockfeed purchasing manager expressed:

“Buying meatmeal is like having Christmas once a month - it's always a surprise.”

Competitors are aware of value and confidently offer price reductions if the product does not meet specifications.

“(Meatmeal) suppliers adopt a take it or leave it attitude.”

6.3.3 DISTRIBUTION

The relative availability of product is a key issue for stockfeed companies. On-time delivery with “no hiccups” is a major requirement. Meatmeal in general terms does not have a good record especially when compared with its competitors.

“A stockfeed mill cannot afford to have 15% of its final ration tied up in a product with such unpredictable availability.”

“Vegetable protein suppliers are five times better than meat meal suppliers.”

“It creates the need to seek more consistent raw material supplies.”

The highly variable and erratic nature of supply is a major difficulty with meatmeal. Suppliers appear more interested in maximising short-term price via export opportunism than developing the on-going supplier relationships sought by stockfeeders.

Meatmeal is contracted monthly — its competitors can be bought against a contract of known quantity, quality and price for periods commonly up to 12 months. There is an inherent lack of trust in deliverability. The availability of meatmeal at short notice to cope with an unexpected demand is often difficult. This is due to the lack of availability of back-up stock and the short-term nature of supply.

“We take what we can get.”

Variation in kill throughput can often make deliverability against contract difficult, especially on a day-to-day basis. These problems are not evident with competitor protein meals and legumes.

6.3.4 INDUSTRY RELATIONS

Relationships between suppliers and purchasers appear extremely poor and could be a root cause of the demise of meatmeal as a key ingredient.

“Good meatmeal is good to have - it’s a pity that good product is dragged down by the stigma of bottomend opportunism.”

“The meat industry does not seem to care ... they have always been able to get rid of it.”

“The meat industry doesn’t give a stuff about its products and uses.”

“The meat industry does not seem to care much about the end (co-product) markets.”

“The meat (meal) industry will trade opportunistically and show no loyalty to local customers.”

“If domestic (users) won’t buy it, there is always the export market.”

There is fundamentally little loyalty displayed to stockfeed customers by suppliers .

The meatmeal industry has not adapted its products or services to suit the management style of intensively produced livestock.

Communication is generally poor in both directions, which exacerbates the problems in the relationship.

There is often little to differentiate suppliers in the areas of product quality or service. Negotiations, therefore, are reduced to price bargaining and short-term price maximisation.

Many stockfeed companies now have developed their own supplier accreditation and will only purchase meatmeal from an accredited supplier. These have been purchaser implemented not supplier driven.

“(Industry) Accreditation would improve consistency, processing and microbiological status.”

The fact that no value-added services of note are offered is an indictment of the suppliers who have not recognised the value of the product to their customers or have no understanding of their needs.

“Lack of customer service is disappointing — we get a regular summary of production testing data from Continental without asking for it.”

On the other side of the relationship, stockfeed buyers appear to have become conditioned to price bargaining and are often seen to abandon quality needs in favour of price. This symptom is seen as a reaction to the “system”, its tradition and the attitudes of senior managers and nutritionists who ultimately define the usage level of raw materials.

6.3.5 MARKETING

From a user perspective there is little obvious interest on the part of suppliers in key issues confronting users. It appears that the rendering industry simply does not care. It has no proactive mechanism to seek information from its markets. Users have never been surveyed by their suppliers.

6.4 INTENSIVE LIVESTOCK - TALLOW

6.4.1 QUALITY

The usage of fats and oils in stockfeeds appears to be growing. Tallow is a good source of energy relative to others. Its supply is reliable. There are various competing alternatives used including sunflower oil, sun/soya blended oils, acid oils, poultry tallow, recycled products and tallow. The specification is usually fairly unspecific, e.g., free fatty acids maximum 10% and water maximum 1%.

The presence of sludge and impurities represents a major problem for handling equipment.

Some of the acid oils can prove damaging to handling equipment and may not be used for this reason. They can also be highly variable - unlike alternatives such as tallow.

Chicken tallow is commonly used and highly valued by chicken producers particularly integrated operators.

There are physical differences between fats derived from vegetable and animal species. Harder fats from pigs, beef and mutton produce a harder fat in the animal. Softer fats and oils (e.g., sunflower and chicken) produce a softer fat. This factor may dictate the use of a particular fat type where the fat hardness in the finished product is important (e.g., harder fat is preferred for processing products in pork).

6.4.2 VALUE

Increasing the use of fats in stockfeed is prompted by trend to high energy (density) feeds for animals. The ability of the animal to efficiently convert high density feed into protein (meat) reflects the impact of improvements that have occurred in breed (genetics), animal husbandry techniques and production facilities.

Limits to usage of fat are often determined by the physical aspects of the feed - the more fat used, the softer the pelleted feed and the harder it is to handle.

In pig and poultry diets the level of tallow inclusion is in the range of 2% to 7%. Tallow's value and usage rate is ultimately price dependent compared to other energy sources such as grain. A simple rule of thumb used by the intensive livestock industry is that usage increases when price is less than about 2.5 times the price of wheat.

As a further guide, the net energy contribution from tallow is 3.4 times that of wheat. The following illustrates this point.

	GROSS ENERGY (MJ/kg)	NET* ENERGY (MJ/kg)
Tallow	36	34
Wheat	16.5	10
Barley	12.7	7

(*Net energy is defined as that available for animal growth and maintenance.)
Source Pers. Comm. A.Edwards, Bunge Meat Industries

In some specific feeds very high levels can be used, for example up to 15% is used in fish feeds.

Another opportunity is in cattle feedlots where up to 4% of tallow is sprayed onto mixed rations. This usage is widespread in the United States but is still in its infancy in Australia. One restricting factor is the need for specific equipment to handle and use the product. There is a belief that most feedlots greater than 10,000 head will be commonly using tallow within the next few years.

6.4.3 DISTRIBUTION

Handling of the product is often a constraint on use at individual facilities.

“Handling will always be a constraint with tallow.”

A key to increased usage is product availability or ease of access to supply and availability of the correct equipment to handle the product. Many users buy the product from traders as they can rely on supply when needed. Traders have access to specialised storage facilities and distribution equipment. Product is almost always available.

Dependence on a renderer, especially smaller abattoirs, may result in poor availability, especially during seasonal lower kill periods. There is generally, therefore, no significant advantage in dealing with a renderer. Trader margins are usually small and offset against their ability to supply quickly.

6.5 DRY PET FOOD - MEATMEAL

6.5.1 QUALITY

The dry pet food industry is a large and growing user of meatmeal. Traditionally the focus on nutritional quality of this industry has concentrated on protein, fat, water and colour. Generally, the standards for micro nutritional components such as amino acid balance have not been as sophisticated as those in the stockfeed industry. This situation, however, appears to be changing, as ration balance, palatibility and performance become more important. The pet food industry's interest will focus increasingly on such issues as essential amino acids, fat, calcium, phosphorus and vitamins.

One large manufacturer is adopting a raw material quality assurance approach rather than finished product quality control.

Colour is often used as a guide to quality. Generally a darker colour suggests the presence of blood or of the product having been burnt (resulting in poorer digestibility). A simple test uses a 'haemo' stick to detect blood.

Particle size, bone chips and hair are a problem with meatmeal, which has a detrimental affect on the extrusion process used in pet food manufacture.

The inconsistency of product week-to-week and the resulting variability in the production process is a major weakness of meatmeal. Poultry offal meal and feather meal is used as an alternative to meatmeal. These products are very consistent and have the added advantage of blandness to allow the specific flavours of finished products to be imparted (e.g., veal, fish, salmon, etc.).

Interestingly, meatmeal is not used in cat food because of its excessive magnesium levels. Cat food is based on fish and poultry, meals which do not have this problem.

Excessive fat in meatmeal causes bridging in silos and difficulty in product handling. Insufficient fat has in some cases also resulted in finished products failing to meet the declared fat (energy) levels.

Fibre variation is also a problem. It causes problems with extrusion, product shape and bulk density (bag fill) variation.

Insect infestation was raised as a problem — particularly relating to the 'skin hide beetle'. This problem has diminished with little or no handling in bags nowadays.

The ability to satisfy demands for consistency in meatmeal should be regarded as an opportunity, given the high standard of poultry meals that are used as substitutes, when they are available.

6.5.2 VALUE

The emergence of poultry meals as a better and more nutritionally consistent product has raised questions about the value of meatmeal.

There are fewer alternative protein sources, since vegetable protein meals are not used in dog food because of the belief that vegetable meals cause excessive wind.

Meatmeal is therefore virtually the only viable alternative — it does not 'earn' its rightful place but rather achieves the result by default. Thus, it is vulnerable to competitive attack unless its inconsistency and other weaknesses are addressed.

6.5.3 DISTRIBUTION

With the two largest manufacturers of dry dog food, Uncle Ben's and Friskies, now located in NSW, the increased demand for meatmeal places additional stress on availability.

Supply needs to be spread between a number of suppliers, with at least one manufacturer drawing supplies from interstate. Further pressure will be placed on supply in NSW when the Friskies plant at Sumner Park in Brisbane is closed and production is transferred to Blayney.

Supply of additional meatmeal on short notice is currently a problem and will only worsen with the aforementioned changes.

6.6 DRY PET FOOD - TALLOW

6.6.1 QUALITY

Palatability is a key requirement of tallow as it is used as a flavour enhancer for dog food. Consistency is therefore important on a batch-to-batch basis to ensure a uniformity of flavour. Single species tallows, therefore, offer some benefits as a means of reducing variability.

Water content and free fatty acids are preferably in the lower range of inedible grades (one manufacturer, for example, requires FFA<2.5% and water<0.4%).

Water content is usually only a problem with delivery vehicles — when water used to clean the tanker is not completely emptied before use.

6.6.2 VALUE

Tallow is used to enhance flavour and as an energy source. The two most highly regarded qualities for tallow are consistency and the absence of contaminants, which may taint the flavour.

6.7 EXPORT - TALLOW

6.7.1 QUALITY

Tallow quality can be quite specific and the biggest trader, Gardiner Smith has a reasonably extensive grading system. Grading factors include the following:

- Titre (solidification point °C)
- Free fatty acids (percentage of oleic acid)
- FAC — Fat Analysis Committee colour standard
- R & B colour - colour after refining and bleaching
- M.I.V. - the common tests on moisture and volatile matter/insoluble impurities/unsaponifiable matter. They are usually reported as a percentage to measure the amount of non-fatty material.

Primarily there is a division into untreated/unbleached and bleached. Thereafter, grades are based on free fatty acids and R & B colour.

6.7.2 VALUE

Price is driven by:

- US tallow prices
- Malaysian palm price
- Value of the Australian dollar

There are few Australian participants in tallow export, because of the need to have access to terminal facilities for efficient handling, shipment consolidation and ship loading.

The largest operator is Gardiner Smith, which has a strong relationship to the major terminal operator — Pacific Terminals. Over the last few years, rationalisation of traders and terminal facilities has occurred.

Kerry Australia more recently began operation as an alternative to Gardiner Smith. There is some direct export from larger groups, such as Australian Meat Holdings, and producers wishing to avoid dealings with the dominant traders.

Traders play an important role in logistics and blending tallows from various sources to achieve required grades to meet customers specifications.

6.8 EXPORT - MEATMEAL

6.8.1 QUALITY

Traders who handle a significant proportion of exported meatmeal, as well as some domestic sales, commented that specifications for export are generally more demanding than those of domestic users.

The usual export specifications are on water and protein content. On top of these specifications, individual customers may also have particular requirements.

Some markets are more demanding than others — for example, Japan compared with the Phillipines.

One significant export trader estimated that 20% of sales have very specific needs, such as pepsin digestibility.

The common physical requirements are for the meatmeal to be free of bone chip and that it meet specific criteria regarding colour and water content.

Some markets have historically been difficult to deal with, such as Taiwan, where rejection on receipt was common despite contractual obligations being met by the seller.

Quality complaints and feedback when raised usually relate to protein level (shortfalls).

Other issues are few and far between. salmonella, calcium and phosphorus are rarely if ever discussed.

6.8.2 VALUE

Export price is affected by international markets for protein meals — particularly soya bean meal.

The physical exporting of meatmeal can either be done direct or via a trader. There are no significant infrastructure barriers to export.

Many of the larger producers therefore export directly, as they are able to develop specialist experience to deal with these markets.

Traders such as Craig Moyston handle large volumes of meatmeal on the export market. It trades at arm's length from suppliers and purchasers, maintaining its position through commercially based relationships. The margin it earns is usually small, with profitability being volume dependant.

Individual customers, particularly in Japan, develop an allegiance with particular products and often specify "usual brands only".

Export sellers presume that meatmeal is used in stockfeed but are not generally aware of particular end uses, such as for pigs, poultry, etc.

7.0 KEY ISSUES FOR MEAT CO-PRODUCTS

7.1 ISSUES IDENTIFICATION

To clearly identify, assess and rank the key issues impacting on meatmeal and tallow, Australasian Agribusiness Services has employed three qualitative analytical tools. The AAS rationale and methodology is described in Appendix II. It is noteworthy that our preferred methodology for issues assessment and ranking was to use these same tools in an industry-based workshop. This option may still be a useful way to verify our conclusions.

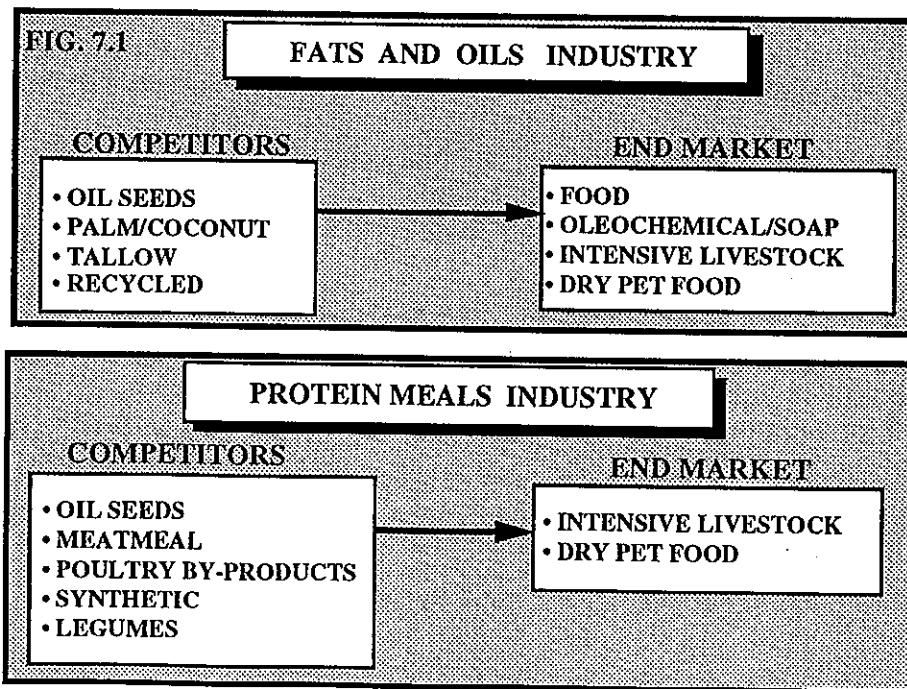
The challenge in this key step is to establish an objective framework from which to evaluate subjective opinions. It is also critical to use a methodology that usefully incorporates the interpretive data base that has been developed by the individual consultants during the field survey process.

The key tools used are:

- SWOT analysis, identifying not only the strengths, weaknesses, opportunities and threats relative to competing product groups but also identifying suggested responses relevant to each that arose from the consultancy.
- A Competitive Performance Matrix to assess the relative performance of competitors in the fats and oils and protein meals industries and how well positioned tallow and meatmeal are respectively within these industries.
- Analysis of the critical success factors to identify the Competitive Advantage that tallow and meatmeal may have.

The analyses provides the basis for developing an Industry Position Statement.

The analyses is based on the two industries in which these co-products are competing; the fats and oils and protein meals industries as illustrated below. (Fig 7.1).



7.2 TALLOW/FATS AND OILS INDUSTRY

7.2.1 SWOT ANALYSIS

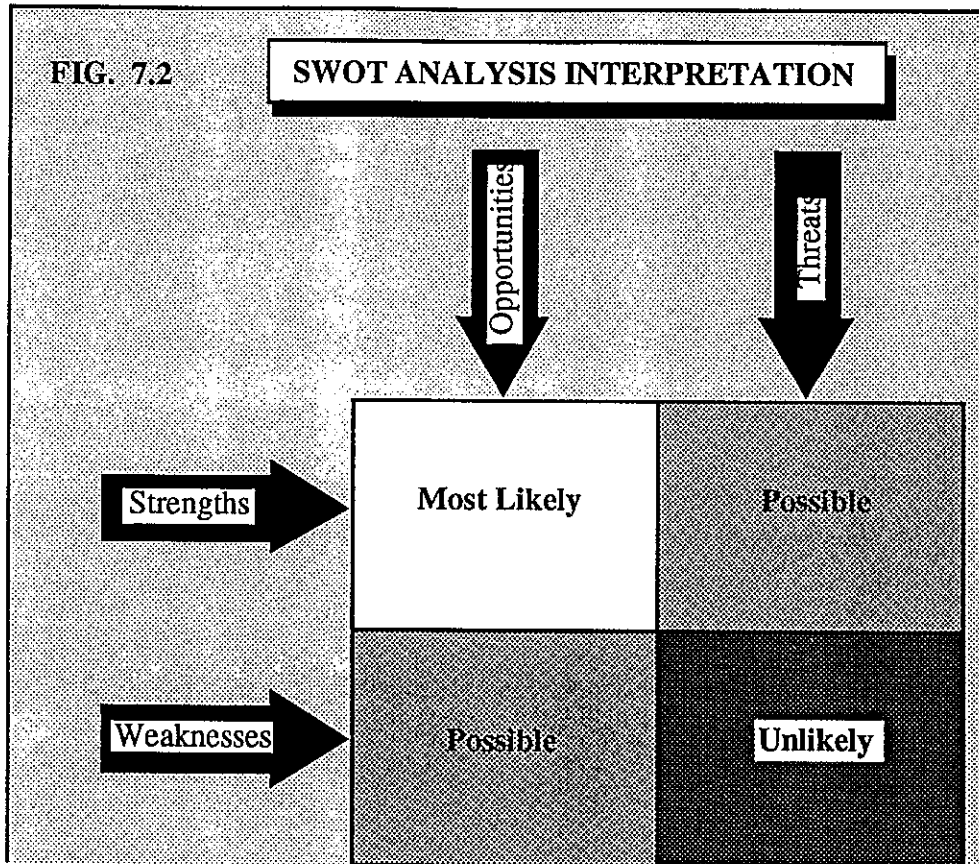
STRENGTHS	HOW DO WE BUILD ON THEM
Consumers are accustomed to flavour imparted to food deep-fried in tallow.	Draw attention to flavour through industry marketing.
Tallow is widely available with good distribution infrastructure.	Exploit logistics/advantages. Develop product enhancing benefits (i.e., inventory management services.)
Tallow is naturally harder than vegetable based fats.	Research the application of these advantages to key user groups. Develop an industry response strategy
Price is cheaper than alternative products.	Feature economies as part of marketing package.
Dense energy source for intensive livestock.	<ul style="list-style-type: none"> • Market advantages and identify particular customer needs and service, particularly distribution facilities. • Target growing Asian intensive livestock market.
WEAKNESSES	HOW DO WE CORRECT THEM?
Strategic marketing management not applied.	Establish industry marketing support via an industry body (e.g. AMLC) to highlight strategic market opportunities.
Limited focus and attention by meat industry management on these products.	Identify potential contribution to industry through improved management involvement .
No technical service facility available to end users.	Develop an industry-based technical support function.
No universal industry grading system and testing capability.	Establish market-oriented industry grades (e.g. Ausmeat) and measurement capability.
Pricing varies too frequently creating uncertainty and consequently reducing usage.	Market advantages of contract supply and pricing systems to smooth price peaks and troughs.
Excessive levels of contaminants which impact on product functionality and quality.	Educate raw material suppliers to adopt a clean "recycling" approach rather than a waste disposal attitude.
Variable product quality compared with alternatives.	<ul style="list-style-type: none"> • Develop opportunity for single species manufacture. • Develop process control standards.

OPPORTUNITIES	HOW TO EXPLOIT THEM
Product streaming - matching product to market needs.	<ul style="list-style-type: none"> •Research and identify market needs. •Develop efficient product streaming process methodology.
Customers seeking fewer suppliers in order to better manage their quality.	<ul style="list-style-type: none"> •Promote the advantages of supplier/purchaser partnerships in achieving better quality. •Implement industry wide Total Quality Management Program.
Customers generally have low stock holding capacities for fats.	Orientate product supply logistics around JIT principles, with supplier guarantee of availability.
Research and develop new product opportunities such as: <ul style="list-style-type: none"> • Alternative fuel (diesel additive). • Plastics raw material. 	Maintain a close working relationship with overseas research bodies (e.g. Fats and Proteins Research Foundation, USA) and develop opportunities applicable to Australian conditions.
Source of energy for intensively produced livestock (pigs, poultry, beef and dairy).	<ul style="list-style-type: none"> • Market advantages to key users. • Establish distribution infrastructure and service (i.e. tanks, vehicles) approach to facilitate product use.
Growing market in Asia for consumer products.	Research growth market opportunities and develop targeted industry export promotion plan.

THREATS	HOW TO AVERT THEM
Lack of knowledge about end-use markets by tallow producers.	Develop end-use market information through trade communication channels.
Trend away from tallow use in the food industry based on consumer health perceptions.	Promote product features proactively.
Less skilled and market-oriented tallow producers tarnish user's perceptions.	Foster plant accreditation to improve industry quality.
Refiners own the technology for further processing to meet end-use market needs.	Forward integration to gain greater control over production and market interface.
Expanding fat recycling market may impact on tallow markets.	<ul style="list-style-type: none"> • Identify quality advantages of "virgin" products. • Incorporate recycled fats into product tariff.
Relatively low barriers to entry for oil seed producers.	Market product features and use long term contracts to secure position in market.
World surplus of fats and oils with growing self sufficiency and competitors.	Protect markets by developing appropriate competitive advantages.

Summary

By matching the strengths of the product with its opportunities, we can readily identify the most likely areas of successful strategic response from an industry. Equally by matching the weaknesses and threats we can also highlight the areas of strategic response most unlikely to succeed. This is illustrated below in Fig. 7.2.



Source: NIES

Strategic competitive response

Strengths

- Flavour to deep-fried foods
- Product availability
- Tallows harder
- Price cheaper
- Dense energy for livestock

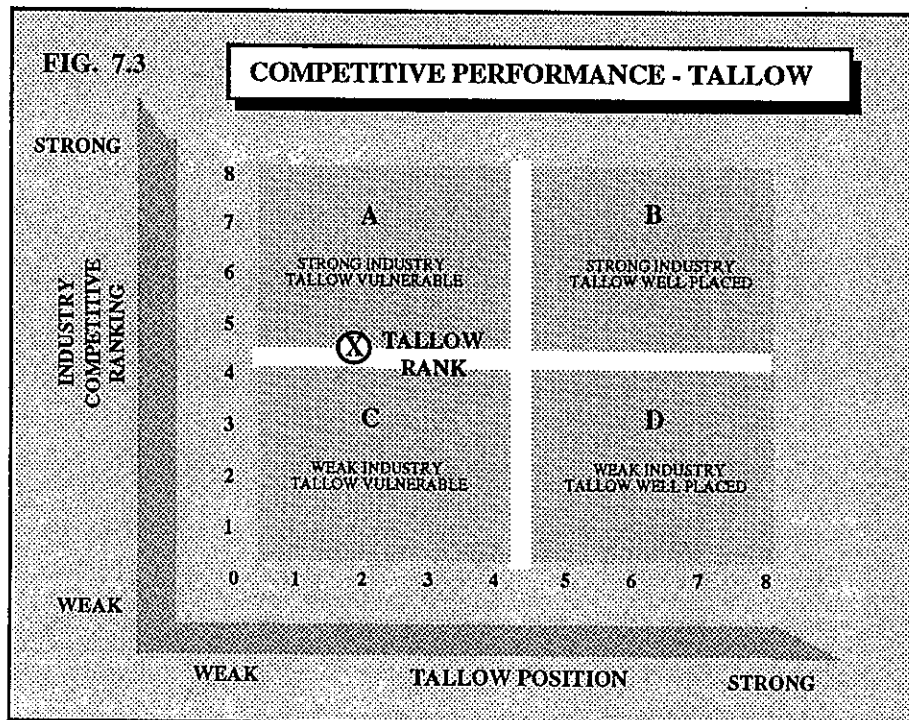
Opportunities

- Product streaming
- Customers seek fewer suppliers
- Customers have low stocks
- New products
- Energy source for livestock
- Growing Asian market

7.2.2 COMPETITIVE PERFORMANCE — TALLOW

Using a competitive performance analysis (see Appendix II) it is possible to rank tallow relative to its competitors within the fats and oils industry in terms of its competitive performance. This is achieved by measuring tallow's performance against key criteria for competitive success. The following key criteria were used:-

- barriers to entry
- product bargaining position
- impact of economies of scale
- adoption of technology
- exposure and vulnerability to change
- market management
- industry product profitability
- rate of industry growth
- responsiveness to global influences

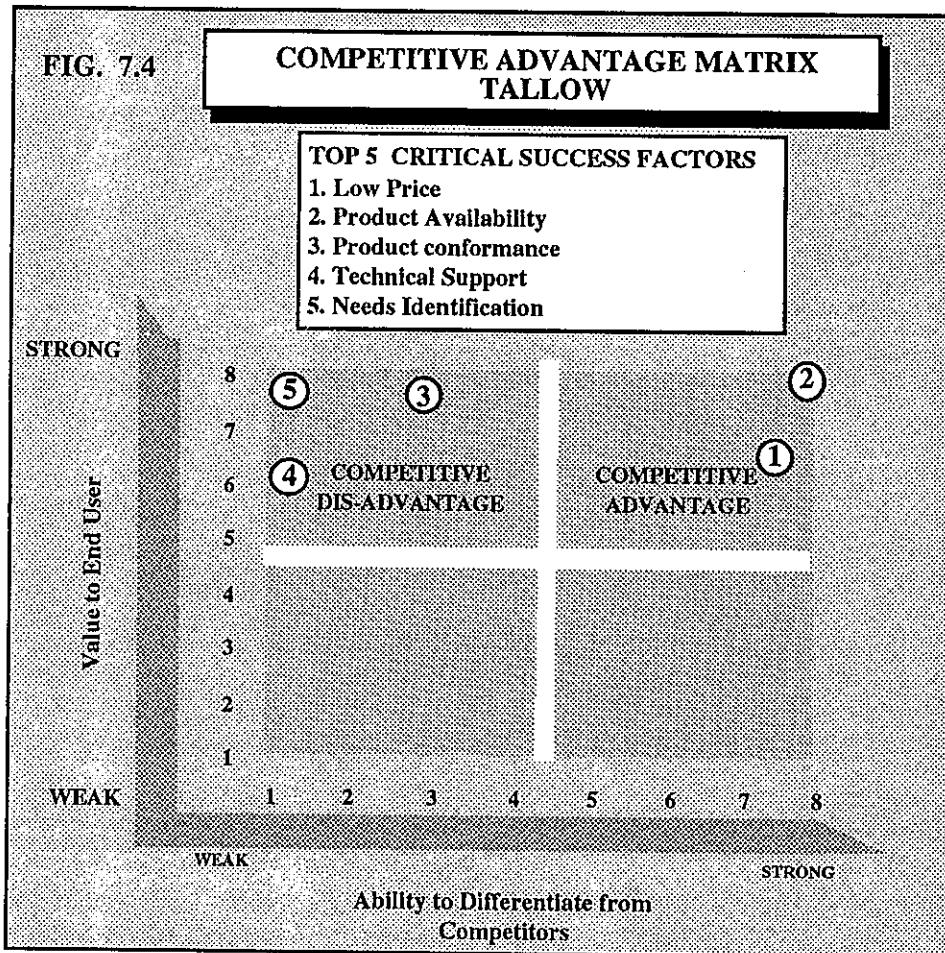


The fats and oil industry is strong and competitive. It has adapted to changing needs through technological improvement and a market-oriented strategic approach.

On the other hand, tallow, as a competitor, is relatively weak in these areas. Tallow is in a vulnerable competitive position due to its poor marketing, lack of responsiveness to technology and poor bargaining strength and commodity nature.

7.2.3 COMPETITIVE ADVANTAGE

To identify the competitive strength of tallow in its market, AAS has employed a simple matrix ranking methodology. (See Appendix II.) The critical factors for success in this industry, as identified from the survey, can be scored according to their relative importance to the market (end-user customer) and tallow's ability to substantially differentiate itself from its major industry competitors. Those factors in which it has a strong ability to differentiate itself from competing products, and which are highly valued by market participants, identify the products' competitive advantage.



Tallow has an apparent competitive advantage that is based on its low price and availability within the Australian market.

It has significant competitive disadvantages based on:

- poor product conformity to requirement
- low levels of technical support
- failure to identify and attend to customer/market needs

7.2.4 POSITION STATEMENT – TALLOW

Traditionally, tallow has a vast range of potential end use applications. However, it is predominantly used in the manufacture of soap, as a frying oil in food manufacture and as a fat for cooking purposes.

Tallow is a highly vulnerable product in the fats and oils market. The failure of tallow producers to focus on the strategic needs and trends in their key end-use markets has resulted in a steady decline in the product's relevance. Tallow is in danger of becoming obsolete in its traditional markets.

The principal strategy historically adopted by meat processors with respect to tallow, has been one of "disposal". The motivation being to dispose of the product as quickly and simply as possible. Thus at industry level, tallow producers have not acquired the necessary marketing skills to effectively compete against their more sophisticated, market-driven competitors in the fats and oils market.

Tallow has special strengths — it is readily available and, because the production infrastructure is fully depreciated, is relatively cheap to manufacture.

These product strengths are not matched by an effective and strategic understanding of the needs of the tallow market by tallow processors. Consequently, tallow demand has shown a consistent long term decline against stronger, more vigorous and better targeted competitive products.

Tallow producers must understand and become more responsive to the needs of their end use markets. They must support their product with the technical and support services that accompany their competitors' product.

Failure to effectively address these issues will mean that in the long-term, tallow producers will be burdened with an ongoing and expensive waste disposal problem, rather than reap the benefits of a valuable revenue-generating and potentially profitable segment of the meat industry.

7.3 MEATMEAL - PROTEIN MEALS INDUSTRY

7.3.1 SWOT ANALYSIS

STRENGTHS	HOW DO WE BUILD ON THEM?
Economical source of highly available phosphorus for intensive livestock markets.	Incorporate available phosphorus as a key part of product standard test and report accordingly.
Widespread availability and relatively lower distribution costs.	Encourage delivered prices to emphasise delivery cost advantage.
Raw material ingredient for stockfeeds containing available amino acids, calcium and phosphorus.	Improve product quality and perception through standards focused on key user values and supply product conformity.
Generally available year round.	Supply contracts providing delivery security via agreed minimum availability.
WEAKNESSES	HOW DO WE CORRECT THEM?
Quality varies excessively compared with alternatives.	Adopt quality management approach focused on better meeting end-users' needs consistently.
Pricing varies too frequently, creating uncertainty and consequently reducing usage.	Market internally the advantages of contract supply and pricing to smooth peaks and troughs.
Meatmeal industry is regarded by customers as not being interested in their needs.	Adopt marketing and customer service orientation through training and management exposure to opportunities.
Variable and erratic supply of product and price.	Promote use of supply contracts with delivery promise.
Lack of management focus.	Identify potential contribution to industry through improved management involvement and market internally to suppliers.
Lack of industry standards focused on users' needs.	Develop industry specifications and quality performance methods (e.g., Ausmeat).
No technical service available to customers.	Provide industry-based specialist technical support function.
No downgrading system for deliveries that don't meet specifications, resulting in a downgrading of meatmeal value.	Incorporate value system to contracts matching price to key nutritional components.

OPPORTUNITIES	HOW TO EXPLOIT THEM
Growth in intensive livestock markets.	Secure market share by improving product consistency, delivery, service, etc.
Growth in dry pet food market (domestic and export).	Develop long-term supply strategies to provide security to user.
Important source of by-pass proteins in feedlot beef production.	Market technical advantages of by-pass proteins to key feedlot users.
Economical source of available phosphorus to intensive livestock market.	Market available phosphorus to key users and ensure industry standard.
Relative proximity to users and lower delivery costs.	Highlight advantages of proximity and offer delivered prices.
Potential use as protein source in dry cat foods (not used currently due to excessive magnesium).	Research practicality of reducing magnesium to acceptable levels.
Customer seeking greater supply security with less variability.	Promote supply contracts.
THREATS	HOW TO AVERT THEM
Competitors supply more dependable package to which users are attracted.	Provide customer responsive products and services through user-derived standards and reporting.
Risk of salmonella outbreak in pig/chicken products and the likely emotive consumer reaction.	<ul style="list-style-type: none"> • Develop proactive management of industry attitudes. • Downstream recontamination education program for users.
Chicken/pork imports and reduction in Australian domestic production.	MRC to support industry submission on disease risks and economic effect on meat industry.
Environment protection requirements and their impact on rendering plants.	<ul style="list-style-type: none"> • Lobby for commercial bias in new regulations implementation. • Seek Government sympathy.

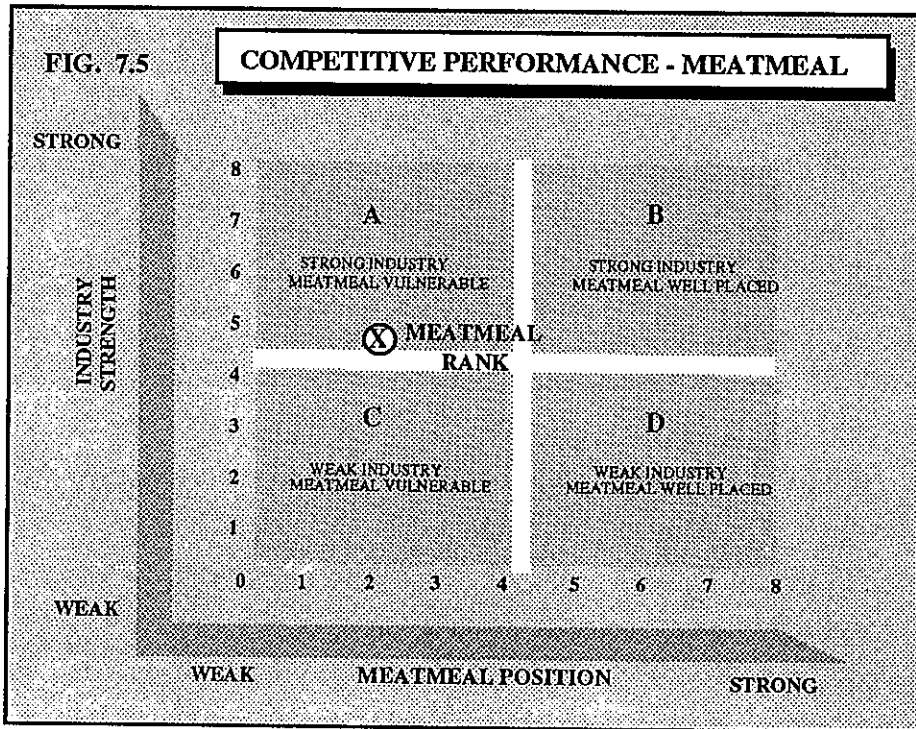
SUMMARY

By adopting the same approach illustrated in Fig. 7.2, we can identify the most likely areas for successful strategic response.

Strengths	Opportunities
Available phosphorus	Markets growing
Widespread availability	Beef feed ingredient
Valuable to stockfeed	Cat food ingredient
Available year round	Proximity to users
Delivery security	

7.3.2 COMPETITIVE PERFORMANCE — MEATMEAL

Meatmeal's competitive performance has been ranked using the same methodology as for tallow.

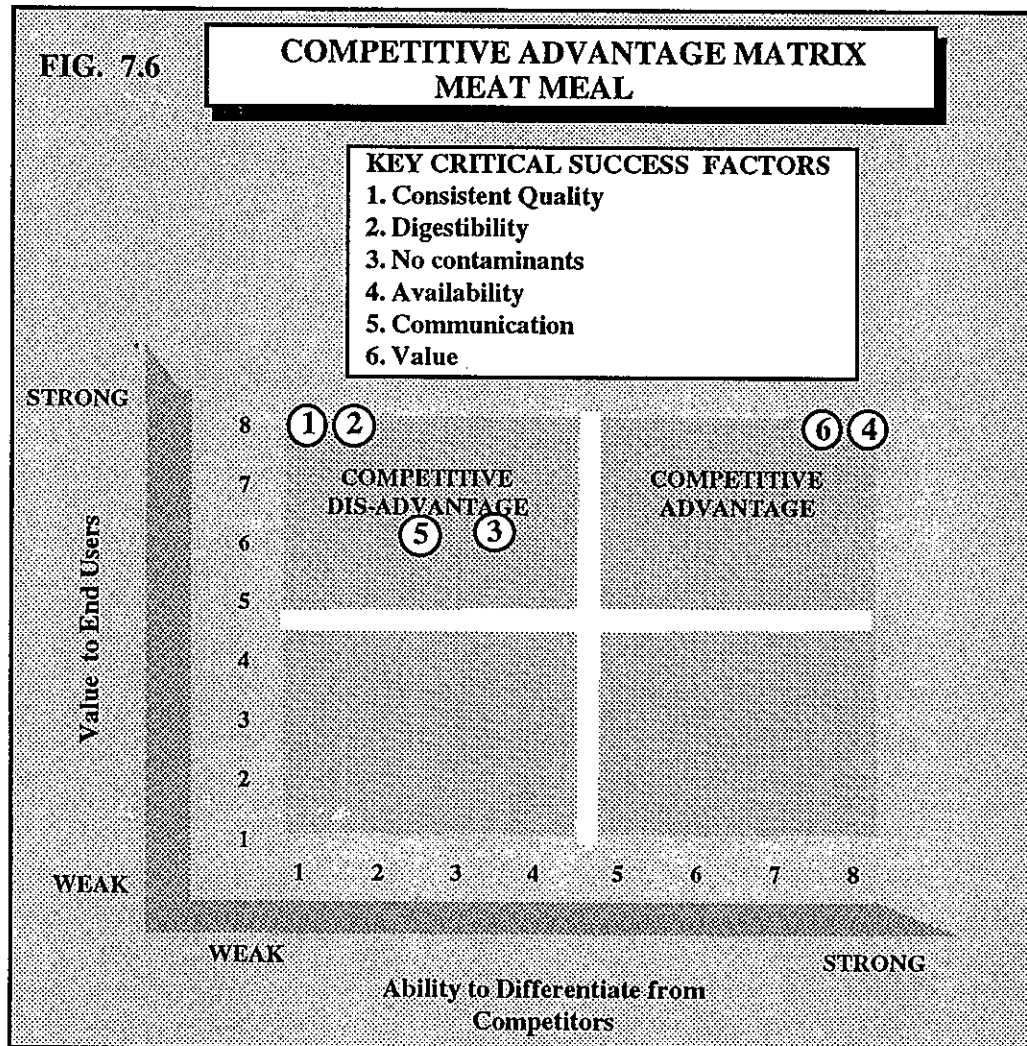


The protein meals industry behaves similarly to the fats and oils industry. It is relatively strong and competitive. The driving forces have been the technological demands flowing from the intensive livestock and pet food industries. Competitors have tended to market strongly and have had a good understanding of product life cycles.

Meatmeal is particularly weak in these key management areas. This makes it vulnerable to its competitors' products. It has used geographic expansion through export markets to overcome declining domestic demand.

7.3.3 COMPETITIVE ADVANTAGE

The critical success factors raised by interviewees have been listed and then assessed according to customers' perceptions of the value of meatmeal and the product's ability to differentiate itself from competing products. The results are shown in Fig. 7.6 below.



The most sustainable competitive advantages of meatmeal is its nutrient value, in particular with respect to phosphorus and protein, as well as its widespread availability.

Meatmeal has several clearly identifiable competitive disadvantages. These relate to:

- very poor product quality management (quality consistency and digestibility are strongly sought by users).
- lack of product definition and limited product development.
- poor communication with and understanding of its key end market (an outcome of the limited attention by senior meat industry management to this product stream).

7.3.4 POSITION STATEMENT - MEATMEAL

Meatmeal is a source of protein and nutrients for intensive livestock production.

Meatmeal producers have allowed their market share of the intensive livestock markets to fall. The product is relatively vulnerable within the protein meals market. It has not experienced the level of growth that its closest competitors, oilseed meals and legumes, have undergone.

Meatmeal producers have been slow to adapt to technological changes and have not marketed their products' key strengths. Producers have fundamentally failed to understand their markets and meat based protein products have not evolved at the same rate as competing products.

Meatmeal does, however, have significant strengths. It is a highly digestible and relatively low cost source of phosphorus. Domestically, meatmeal is readily available year round. Its key end markets are also growing.

End users are seeking improved technical performance and service. Consistent quality, lack of contaminants and an understanding of users needs will be essential if the meat industry is to realise the full value of this product.

8.0 KEY RECOMMENDATIONS

AAS has developed the following list of recommendations. These are not intended to be exhaustive. They represent a basis for further industry discussion and consideration.

8.1 MARKETING SUPPORT

A key need is to provide an industry marketing program. This may involve the industry and its key participants. The major functions would include developing a strategic industry marketing plan reflecting the following:

- identify product attributes and appropriate marketing programs which emphasize their value;
- identify and develop product enhancing services of value to customers;
- recommend the best use of price advantages in the marketing package;
- develop methods to identify existing key customers and new market needs, particularly for export opportunities.

8.2 TECHNICAL SUPPORT

Technical service has been identified as an important need in the meatmeal and tallow markets. The establishment of an industry technical support function is recommended. Particular functions would include:

- developing product standards, grades measurement and testing capabilities, if required;
- providing industry-based technical services to key users;
- developing logistics to identify the best methods of supply to key user groups;
- further developing of the rendering plant accreditation scheme incorporating key user needs;
- on-going incorporation of key user requirements into product specifications and grades.

8.3 EDUCATION AND TRAINING

This report identifies a strong need for training within the industry. The key components of a training program would include:

- further enhancement of the existing CSIRO-based plant operator scheme to focus on quality management;
- provision of a training package on supply logistics incorporating "just-in-time" principles;
- customer service training, specifically oriented to tallow and meatmeal markets;
- supplier training in management of waste to reflect the need for quality raw materials for renderers;
- end-user training in management of product to prevent recontamination.

8.4 RESEARCH AND DEVELOPMENT

There are several areas identified for research and development. They include the following:

- new product opportunities;
- process control standards to improve quality to meet user needs, including methods for product streaming;
- development of processes to produce single species products;
- research methods to incorporate fat recycling into existing rendering plants;
- research the risks, opportunities and recommend policy for the use of meatmeal in dairy and beef feeds;
- research and recommend strategies to capture growth opportunities in export markets.

Some of these needs could be most practicably and cost effectively achieved by establishing an appropriate relationship with overseas research bodies such as the US Fats and Protein Research Foundation.

8.5 INDUSTRY PUBLIC RELATIONS

As a part of the industry marketing package, there is need for a public relations program. Its focus would include the following:

- promote product and service attributes;
- support for key user groups — for example, chicken and pork industries in their endeavour to reduce the effect of imports;
- provide a lobby mechanism for key industry issues – for example, the impact of Environment Protection Authority regulations on renderers.

8.6 COMMERCIAL ASPECTS

This report identifies the need for longer-term pricing and supply contracts to reduce fluctuations in price and provide supply security to end users.

Facilitation may require the establishment of improved price reporting and development of a mechanism for price hedging. This need should be further researched and considered by the industry.

Contracts should also reflect those components which are of key value to customers. Price mechanisms should be linked to performance against standards and grades (refer Technical Support above) and delivery.

8.7 INDUSTRY STRATEGIC PLAN

There is an industry need for commitment to develop opportunities, protect strengths and resolve shortcomings.

AAS's strong recommendation is to develop a strategic industry plan involving key stakeholders as contributors. Such a plan would further add depth and industry perspective to this report and provide commitment from the industry to resolve the various issues.

MEAT RESEARCH CORPORATION

THE
MEATMEAL AND TALLOW
INDUSTRY
& ITS MARKETS

APPENDICES

Prepared by
Australasian Agribusiness Services Pty. Ltd.
January 1993

APPENDIX I

RESEARCH METHODOLOGY

RESEARCH MODEL

AAS has used the following research model to undertake the aims of the consultancy.

Four major steps were proposed:

- Step 1:** Data audit
- Step 2:** Gap Analysis and Survey
- Step 3:** Industry Situation Report
- Step 4:** Analysis and Position Statement
- Step 5:** Strategic Option Determination and Responses

These steps are illustrated in the diagram following.

STEP 1 — DATA AUDIT

An extensive literature and data review of Australian industry sources relating to meatmeal and tallow was implemented. This review included information from the following bodies:

- Australian Bureau of Statistics
- Meat Research Corporation
- Australian Meat & Livestock Corporation
- Australian Bureau of Agricultural & Resource Economics

In addition various industry organisations were approached to identify relevant data and background information. Throughout the interview and survey process additional literature and published data was elicited and added to this audit.

Results of the audit are a detailed review of literature and industry statistics and data. Separate documents covering these aspects have been produced.

STEP 2 — INDUSTRY MODEL, GAP ANALYSIS, SURVEY

Following initial collection of data and industry information, a limited number of key industry interviews were conducted. These were specifically to seek data and describe an industry model on which to base the extensive survey work.

Initial lists of industry participants were prepared at the various levels and segments described by the model.

Gaps identified following the audit were used to provide focus and weighting for defining survey needs.

Detailed survey questionnaires were developed separately for suppliers/traders and end-user markets. These were then trialed on selected interviewees and refined before more widespread implementation.

Interviewees were defined to cover suppliers, traders and markets with an appropriate geographic spread covering all mainland states.

These personal interviews were supplemented by extensive telephone surveys to seek specific quantitative data especially where significant information gaps existed.

Specific information on competitive products was sought both via interview and telephone research.

STEP 3 — INDUSTRY SITUATION REPORTING

Quantative data resulting from survey was added to the existing information and the resulting information is described in the main report. Trend information has been developed from this data.

Qualitative information, especially the major issues resulting from interviews have been collated and described in detail.

Included was also competitor product information with details summarised as appropriate in the report.

STEP 4 — ANALYSIS AND POSITION STATEMENT

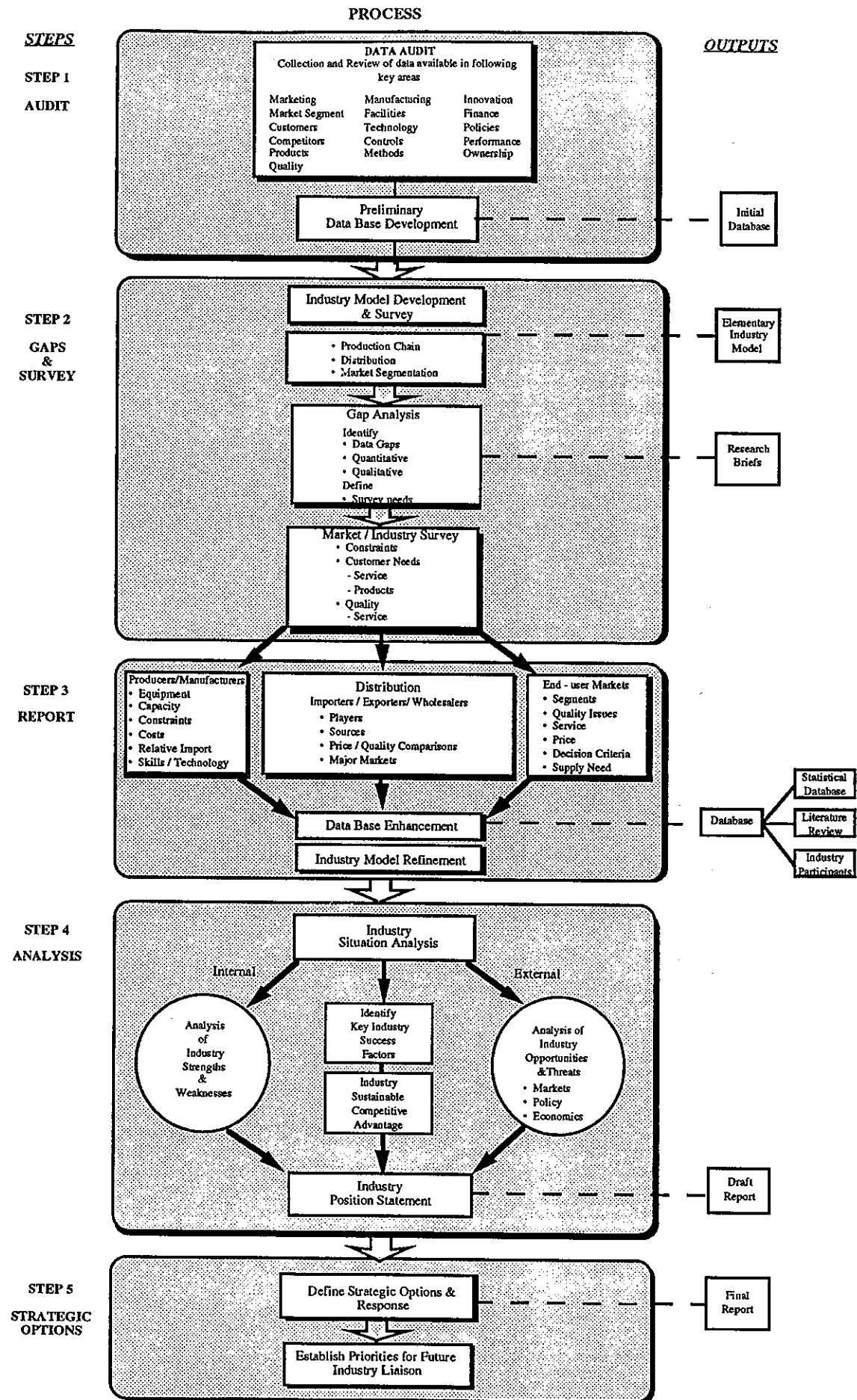
Following collection and summation of data the various issues arising have been identified through formal processes including:

- SWOT analysis
- Competitive performance diagnostic
- Competitive advantage

The summary of these analyses is the Industry Position Statement.

STEP 5 — STRATEGIC OPTION DETERMINATION

While a number of issues arise from Step 4, AAS believes it is appropriate that the MRC and the various industry groups should contribute to establishing the outcomes and priorities of the findings of this report. Nevertheless AAS has developed a list of recommendations based on the survey as a basis for further industry discussion.



APPENDIX II

ISSUES ASSESSMENT METHODOLOGY

- II. 1 SWOT ANALYSIS**
- II. 2 COMPETITIVE PERFORMANCE ASSESSMENT**
- II.3 COMPETITIVE ADVANTAGE**

ISSUES ASSESSMENT

The survey methodology employed in this project resulted in the generation of significant amounts of qualitative data. This data was accumulated in two forms:

- (1) Extensive notes and records, resulting from the field survey. These are held in hard copy by Australasian Agribusiness Services Pty. Ltd.
- (2) The development of an intuitive database which represents that active knowledge and interpretation achieved by the consultants who undertook the survey.

In order to use both sources of information to their fullest value, Australasian Agribusiness Services Pty. Ltd. has adopted three techniques:

- (1) SWOT analysis
- (2) Competitive performance assessment
- (3) Identification of competitive advantage

II.1 SWOT ANALYSIS

SWOT (strengths, weaknesses, opportunities and threats) analysis is a standard tool for strategic analysis, well documented and well understood. Our method, as reported in the body of the report, is self-explanatory. Australasian Agribusiness Services' approach in this instance has used the basis of survey reports to complete the SWOT analysis. This was achieved by systematically reviewing all reports and commentary from survey participants and listing:

- strengths
- weaknesses
- opportunities
- threats

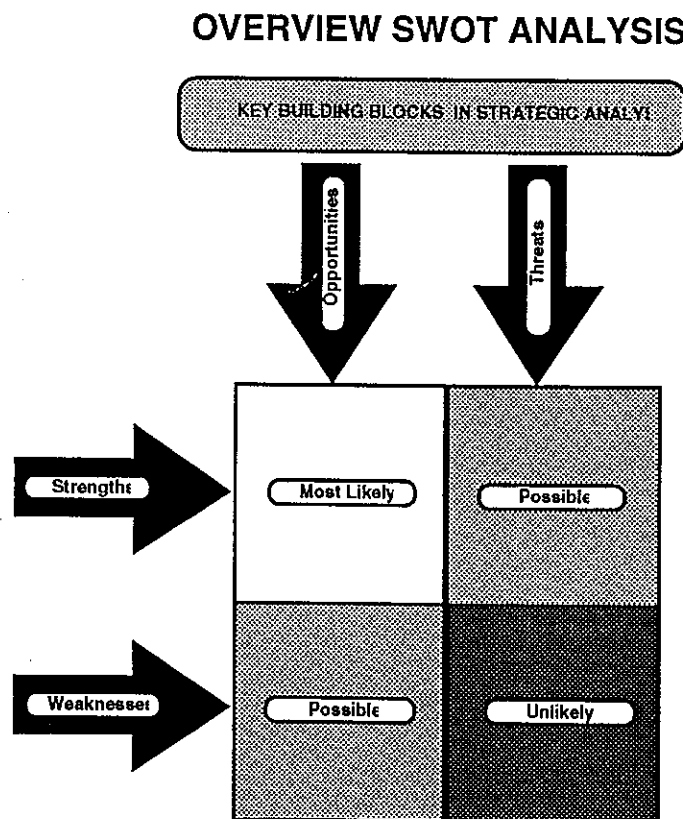
Based on field discussions and our own views, AAS has detailed its responses to each of them.

IDENTIFYING INDUSTRY STRATEGY

The SWOT analysis can be used as a further input into the development of industry product and market priorities. The strengths, weaknesses, opportunities and threats can be organised into a grid as shown. Product/market combinations that are most likely to be successful are those which capitalise on the industry strengths and address the external opportunities. On the other hand, the least likely product/market groups are those which expose the industry to its weaknesses and/or involve a high degree of external threat.

It can be useful to consider the industry's current and potential strategy using this grid.

AAS finds this analysis sometimes more useful than a portfolio analysis because it involves the consideration of a greater level of internal and external detail in the analysis process.



II.2 COMPETITIVE PERFORMANCE ASSESSMENT

An important expected outcome of this project was the generation of a live interpretive database by the consultants. The useful interpretation and assessment of that data can be achieved in a number of methods. Australasian Agribusiness Services Pty. Ltd. chose a diagnostic methodology adopting a propriety consulting methodology developed by Australasian Agribusiness Services Pty. Ltd.

This methodology seeks to identify industry competitiveness by ranking key performance criterion at an industry level and contrasting the performance of the specific product group relative to those criterion.

The subjective nature of any ranking is overcome by designing questions that have a contrasting description of the alternative extremes of performance in a number of elements that make up for failure in the key elements. In this instance we chose only to look at competitive performance and we include in the following pages a sample of the questions that were applied to both meatmeal and tallow and the ranking methodology adopted. The industry's competitive performance can then be ranked by using an appropriate matrix methodology.

A PRODUCT/INDUSTRY COMPETITIVE PERFORMANCE DIAGNOSTIC

OVERVIEW

A product that is competitively strong relative to competing products in the same industry will have a very different set of opportunities from a product range that is poorly positioned.

Equally, if an industry is not vibrant or is relatively mature, it may offer member products a less vibrant outlook. The opportunity for sustained product growth in an industry that is itself not growing is restricted. While a product may compete successfully despite adverse industry trends, the long-term prospects can be expected to be poor and reflect declining returns, growth opportunities and general market well-being.

The strategic options, therefore, for a given product/industry competitive scenario will be quite varied.

A product range that is dependent on an industry which does not have attractive long-term prospects may well be a product heading for obsolescence. Owners of such products may find the adoption of product exploitation and diversification strategies to be the best option.

In contrast owners of a product range that competes poorly in a healthy and vibrant industry would have a range of positive strategic options available to them including:

- Products enhancement
- Product development
- Market mix adjustment
- Industry withdrawal

This diagnostic process is a means of assessing:

- How attractive the prospects are for a particular industry.
- How competitively well positioned a specific product (group) might be within the same industry.

This process seeks to establish an objective measure of a range of subjective rankings or views. The scale adopted is relatively arbitrary. However the scale chosen must be of sufficient range as to smooth subjective variances in view and opinion.

The key criterion that determine the relative competitiveness of a product and the strength of the industry in which it competes are:

- Barriers to entry
- Bargaining position within the industry
- Economies of scale
- Technological development
- Vulnerability to change
- Market management
- Profitability
- Growth rates
- Global strengths

The Overview diagram illustrates the apparent relationship.

THE DIAGNOSTIC PROCESS

Defining the Industry

A precise definition of industry (or industries) in which a product (or product group) competes is an essential first step. This is best done by thinking in terms of both product (or groups of products) and the markets (or customers groups) to which they are directed.

Scoring Industry Position

A series of contrasting questions that describe a key element of the competitive performance criteria have been established. By rating or ranking the overall performance of the industry with respect to each element described, an aggregate industry position can be established.

Using the rating scales for each pair of descriptive questions, circle the number on the scale that best describes the position of the industry against the contrasting question.

For example, if the left hand description is an accurate reflection of how the industry performs, it will be rated as an 8. If the industry is best described as somewhere in between the two opposite descriptions it will be ranked at one of the numbers around the mid-point. Or, if the right hand descriptive position is the most accurate reflection of the way the industry performs, this element will get a rating of 1.

Having done this, for each pair of opposing descriptions the average of all these ratings will become the **average Rating for the Industry** for this key criteria.

Rating the Product Group

If the product (or product group) has special features that gives it an advantage over the industry as a whole, again rate the product (or product group) on a 1-8 scale against **Product (or Product Group) Position**

The ratings that are developed for the specific product (or product group) can then be summarised in Section 5.0. From this summary, **Industry Attractiveness** and **Product (or Product Group) Position** can be contrasted and some possible strategies identified.

Market Entry Barriers

1	The relative market positions of competitors within the industry are unchanged over the last 10 years.	8 7 6 5 4 3 2 1	The relative market positions of competitors within the industry have changed significantly over the last 10 years.
2	Customers tend to stay with the products of the competitors with which they normally deal.	8 7 6 5 4 3 2 1	Customers use different competitors products interchangeably.
3	Competitor's actions can be easily anticipated.	8 7 6 5 4 3 2 1	Competitors actions are difficult to anticipate.
4	There are now fewer competitors than there were 10 years ago.	8 7 6 5 4 3 2 1	There are now more competitors than there were 10 years ago.
5	All the competitors in the industry have remained independent.	8 7 6 5 4 3 2 1	The competitors are rapidly merging to gain market position.
6	It is very expensive to increase market share.	8 7 6 5 4 3 2 1	It is relatively cost-effective to increase market share.
7	Australian imports have not increased significantly over the last 10 years.	8 7 6 5 4 3 2 1	Imports have increased rapidly over the last 10 years.
8	Current industry members have high technology or expertise that is difficult to gain or is protected by patent.	8 7 6 5 4 3 2 1	The technology/expertise used in the industry is easily gained.
9	There are significant start-up costs (including, for example, investment in facilities, working capital or advertising and promotion) which would deter new competition.	8 7 6 5 4 3 2 1	There are only small start-up costs required to enter the industry.
10	There has been little change in operating technology and little is foreseen in the future.	8 7 6 5 4 3 2 1	The industry has had significant changes in production technology and these are expected to continue.
11	Competitors can easily leave the industry, for example, if returns are low, because their expertise and technology can be transferred to other industries.	8 7 6 5 4 3 2 1	Competitors tend to remain in the industry because their expertise and technology has no alternative application.
11	All competitors in the industry succeed or fail by their performance in this industry alone. Their performance is not subsidised by other activities.	8 7 6 5 4 3 2 1	Weak competitors remain in the industry because of broader strategies set by, for example, their parent companies which are willing to finance present losses.

Average Rating for the Industry -

Product (or Product Group) Position

There are special factors which give this product (or product group) protection from new competitors entering the industry that do not apply to your competitors.	8 7 6 5 4 3 2 1	There are no special factors that make this product (or product group) any different from the industry as a whole.
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Bargaining Position

1	The industry sells to a wide range of organisations and markets.	8 7 6 5 4 3 2 1	The industry sells to a small number of organisations and markets.
2	The industry sells on terms attractive to itself.	8 7 6 5 4 3 2 1	The industry sells to end markets on terms they dictate.
3	The industry can buy from a wide range of suppliers.	8 7 6 5 4 3 2 1	The industry buys from a small group of suppliers.
4	The industry buys on terms attractive to itself.	8 7 6 5 4 3 2 1	The industry buys on terms dictated by suppliers.
5	The industry's range of activities is generally more diverse than those of suppliers and customers. It is, therefore, less dependent than they on this industry.	8 7 6 5 4 3 2 1	The industry's range of activities is generally narrower than those of suppliers and customers.
6	The size of end users tends to be much smaller than companies in the industry.	8 7 6 5 4 3 2 1	The size of end users tends to be much larger than companies in the industry.
7	The size of suppliers tends to be much smaller than companies in the industry.	8 7 6 5 4 3 2 1	The size of suppliers tends to be much larger than companies in the industry.
8	Alternative suppliers frequently approach competitors in the industry to do business.	8 7 6 5 4 3 2 1	Competitors in the industry have to seek out suppliers.
9	Buying the industry's product(s) is seen as beneficial to the marketing strategies of its immediate customers.	8 7 6 5 4 3 2 1	Buying the industry's product(s) is not seen by customers as a significant marketing advantage.
10	The industry's products have a wide range of different applications.	8 7 6 5 4 3 2 1	The industry's products are highly specific.

Average Rating for the Industry

Product (or Product Group) Position

There are special factors that give this product (or product group) a much better bargaining position than the industry as a whole:

- Exclusiveness
- Locations
- Size
- Consignment

8 7 6 5 4 3 2 1

There are special factors that give this product (or product group) a much weaker bargaining position than the industry as a whole.

Economies of Scale

- | | | | |
|---|---|-----------------|--|
| 1 | Fixed costs represent the major proportion of total costs for the industry. | 8 7 6 5 4 3 2 1 | Fixed costs are a negligible proportion of total cost. |
| 2 | Throughput levels can be easily expanded to meet new demand. | 8 7 6 5 4 3 2 1 | There is little potential for increasing throughput without significant expenditure. |
| 3 | Throughput levels are easily predictable several months in advance. | 8 7 6 5 4 3 2 1 | Throughput levels are very hard to predict. |
| 4 | Throughput levels tend to be constant over a year. | 8 7 6 5 4 3 2 1 | Production levels tend to be volatile and very seasonal. |
| 5 | Products/services are very standardised. | 8 7 6 5 4 3 2 1 | Products are highly varied. |
| 6 | Competitors in Australia are of a comparable size to those in the same industry overseas. | 8 7 6 5 4 3 2 1 | Competitors in Australia are much smaller than those in the same industry overseas. |
| 7 | The length of production experience of the competitors in the industry enables them to operate at a lower unit cost than would be possible for a new entrant. | 8 7 6 5 4 3 2 1 | The length of production experience has no influence on the costs of production. |

Average Rating of the Industry

Product (or Product Group) position

- | | | |
|---|-----------------|---|
| This industry segment's size and experience of production allow it to produce at a cost considerably lower than any other product (or product group). | 8 7 6 5 4 3 2 1 | The opportunities to reduce unit costs in this industry subsegment by increased throughput are lower than average for the industry. |
|---|-----------------|---|

Technology Improvement within the Industry

- | | | | |
|---|--|-----------------|--|
| 1 | The basic level of technology in the industry is high relative to other industries. | 8 7 6 5 4 3 2 1 | The basic level of technology is low. |
| 2 | Research and Development expenditure within the industry is high. | 8 7 6 5 4 3 2 1 | Research and Development expenditure within the industry is low. |
| 3 | Technology changes rapidly in the industry. | 8 7 6 5 4 3 2 1 | Technology changes slowly in the industry. |
| 4 | The industry quickly incorporates technological developments from other industries. | 8 7 6 5 4 3 2 1 | The industry slowly picks up technological developments. |
| 5 | The market demands response to technological developments. | 8 7 6 5 4 3 2 1 | The market is insensitive to technological developments. |
| 6 | The industry devotes a considerable amount of effort to Research and Development. | 8 7 6 5 4 3 2 1 | The industry devotes minimal effort to Research and Development. |
| 7 | There are overseas competitors in similar industries that are more advanced technologically, and it is easy to gain access to that technology. | 8 7 6 5 4 3 2 1 | There are no overseas competitors from which technology can be transferred. |
| 8 | Australian competitors in the industry are more technologically advanced than their overseas counterparts. | 8 7 6 5 4 3 2 1 | Australian competitors in the industry are less technologically advanced than their overseas counterparts. |

Average Rating for the Industry

Product (or Product Group) Position

- | | | |
|--|-----------------|---|
| Your product (or product group) develops and incorporates changes in technology quicker and more cost-effectively than your competitors. | 8 7 6 5 4 3 2 1 | Your product (or product group) incorporates changes in technology more slowly and less cost effectively than your competitors. |
|--|-----------------|---|

Industry Vulnerability to Change

1	The needs of customers will be the same in 10 years.	8 7 6 5 4 3 2 1	The needs of customers will be very different in 10 years' time
2	Suppliers will be much the same in ten years as they are now.	8 7 6 5 4 3 2 1	Suppliers will be totally different in 10 years.
3	The products of the industry will be much the same in 10 years.	8 7 6 5 4 3 2 1	The products of the industry will be markedly different in ten years.
4	Current operating methods will still be appropriate in 10 years.	8 7 6 5 4 3 2 1	Current operating methods will be outdated in 10 years.
5	The industry will be less adversely affected by economic, social and government conditions than any other.	8 7 6 5 4 3 2 1	The industry will be severely hit by adverse economic, social and government conditions.
6	End-use markets will not be more adversely affected by changing conditions than those of any other industry.	8 7 6 5 4 3 2 1	End-use markets will be severely affected by changing conditions.
7	The industry will be subject to changing levels of government regulation.	8 7 6 5 4 3 2 1	Government regulation is expected to remain at present levels.

Average Rating for the Industry

Product (or Product Group) Position

This product (or product group) will be hit less severely by changing conditions than other competitors in the industry.	8 7 6 5 4 3 2 1	This product (or product group) will be hit more severely by changing conditions than other competitors in the industry.
--	-----------------	--

Management of the Market

- | | | | |
|---|--|-----------------|---|
| 1 | The competitors within the industry generally understand the product life cycle and base their decisions accordingly. | 8 7 6 5 4 3 2 1 | The competitors within the industry have no concept of the industry product life cycle. |
| 2 | The industry is pursuing developments which will extend the life cycle of products. | 8 7 6 5 4 3 2 1 | The industry is unable to favourably influence the products' life cycle. |
| 3 | The range of products produced by the industry are at different stages of their life cycle so as to provide overall balance. | 8 7 6 5 4 3 2 1 | The industry is confined to a single product or set of products with similar positions on the life cycle. |
- Average Rating for the Industry -**

Product (or Product Group) Position

There are specific factors that give your product (or product group) advantages over its competitors in reacting to or managing product life cycles.	8 7 6 5 4 3 2 1	Your product (or product group) has no advantages over its competitors in dealing with product life cycles.
--	-----------------	---

Profitability

- | | | | |
|---|---|-----------------|--|
| 1 | The industries' average historic earnings, before interest and tax, tended to be much higher than for other industries of comparable risk for the investor. | 8 7 6 5 4 3 2 1 | The industry's average historic earnings, before interest and tax tended to be much lower than for other industries of comparable risk for the investor. |
| 2 | The industry's future earnings, before interest and tax, are expected to be much higher than for other industries of comparable risk. | 8 7 6 5 4 3 2 1 | The industry's future earnings before interest and tax are expected to be much lower than for other industries of comparable risk. |
| 3 | The risk of losses and volatility of profits tends to be very low in this industry. | 8 7 6 5 4 3 2 1 | The risk of losses and volatility of profits tends to be very high in this industry. |
| 4 | Capital gains in the value of competitors in this industry tend to be much higher than for other industries of comparable risk. | 8 7 6 5 4 3 2 1 | Capital gains in the value of competitors in this industry tend to be much lower than for other industries of comparable risk. |

Average Rating for the Industry-

Product (or Product Group) Position

- | | | |
|--|-----------------|---|
| <p>There are special factors that make your product (or product group)'s present or potential returns much higher than the norm for the industry:</p> <ul style="list-style-type: none"> - Low debt levels - Customer loyalty - Position and facilities | 8 7 6 5 4 3 2 1 | There are special factors that make your product (or product group)'s present or potential returns much lower than the norm for the industry. |
|--|-----------------|---|

Industry Growth Rate

- | | | | |
|---|---|-----------------|---|
| 1 | The competitors in the industry tend to have had very high growth rates over the last 10 years (e.g., over 25% p.a. in output). | 8 7 6 5 4 3 2 1 | The competitors in the industry have declined in output over the last 10 years. |
| 2 | The competitors in the industry are expected to have high growth rates over the next three years. | 8 7 6 5 4 3 2 1 | The competitors in the industry are expected to decline in output over the next three years. |
| 3 | New competitors joining the industry have considerably increased its total output. | 8 7 6 5 4 3 2 1 | Competitors leaving the industry have considerably diminished its output. |
| 4 | New competitors are expected to enter the industry with the net effect of increasing its total output in the next three years. | 8 7 6 5 4 3 2 1 | Competitors are expected to leave the industry in the next three years, with the net effect of reducing its overall output. |

Average Rating for the Industry

Product (or Product Group) Position

There are special factors affecting your product (or product group) that will enable it to greatly exceed the industry growth rate:

- Accessibility
- Product knowledge
- Promotions and Merchandising

8 7 6 5 4 3 2 1

There are special factors affecting your product (or product group) that will cause it to fall significantly short of the industry growth rate.

Global Influences

1	Over 50% of Australian output is sold to overseas customers.	8 7 6 5 4 3 2 1	None of the Australian output is sold to overseas customers.
2	This proportion of export sales will grow by at least 50% in the next three years.	8 7 6 5 4 3 2 1	This proportion of export sales will remain static or decline in the next three years.
3	Over 50% of output sold to Australian customers is sold to customers in states other than where it is produced.	8 7 6 5 4 3 2 1	No output is sold to customers in Australian states other than where it is produced.
4	The proportion of interstate sales will grow by at least 50% in the next three years.	8 7 6 5 4 3 2 1	The proportion of interstate sales will remain static or decline in the next three years.
5	Australian firms in the industry are well represented in overseas markets, either through their own offices and subsidiaries or through effective local intermediaries. Average Rating for the Industry -	8 7 6 5 4 3 2 1	Australian firms in the industry are unrepresented in overseas markets.
	Product (or Product Group) Position		
	There are special factors which enable your product (or product group) to expand its sales geographically more widely and faster than the industry is able to as a whole.	8 7 6 5 4 3 2 1	There are special factors which restrict your product (or product group)'s capacity to rapidly expand the geographical coverage of its sales.

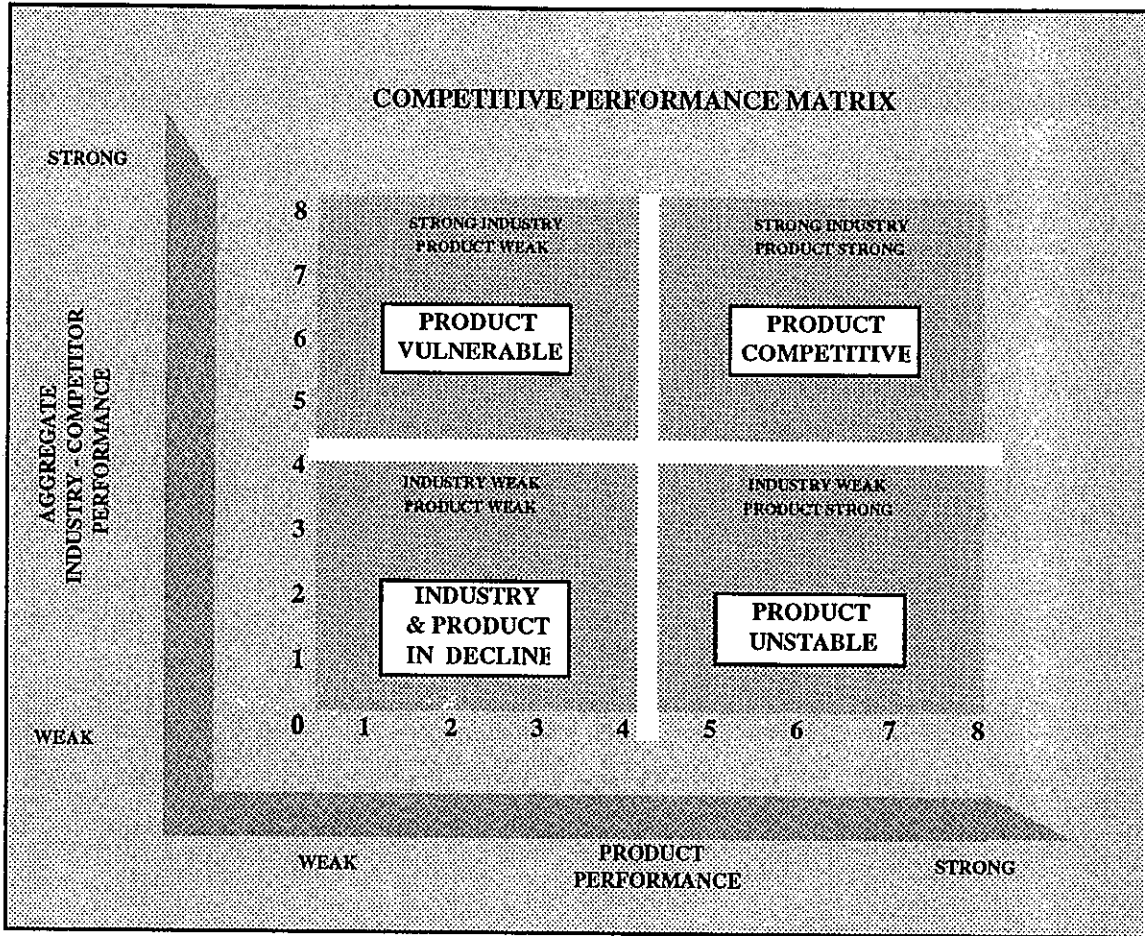
SCORING THE RELATIVE POSITION

To assess the product (or product group)'s industry positions take the average rating for the industry and the product (or product group)'s position rating from each of the preceding sections and enter them on the table below.

Section Reference	Industry Attractiveness	Product Position
Barriers to Entry		
Bargaining Position		
Economies of Scale		
Technological Development		
Vulnerability to Change		
Market Management		
Profitability		
Growth Rates		
Global Strengths		
Average of the above ratings	_____	_____
	_____	_____

COMPETITIVE PERFORMANCE MATRIX

The following matrix illustrates the relative position of the product within its industry. This approach aids the development of relevant strategies.



II.3 COMPETITIVE ADVANTAGE

The methodology adopted provides an opportunity to short-list the critical success factors and to rank them according to their ability to produce market value and their ability to differentiate the industry from its competitors.

STEP 1

These rankings are plotted on a simple matrix to provide a graphical representation of the overall importance and impact of each of the critical success factors.

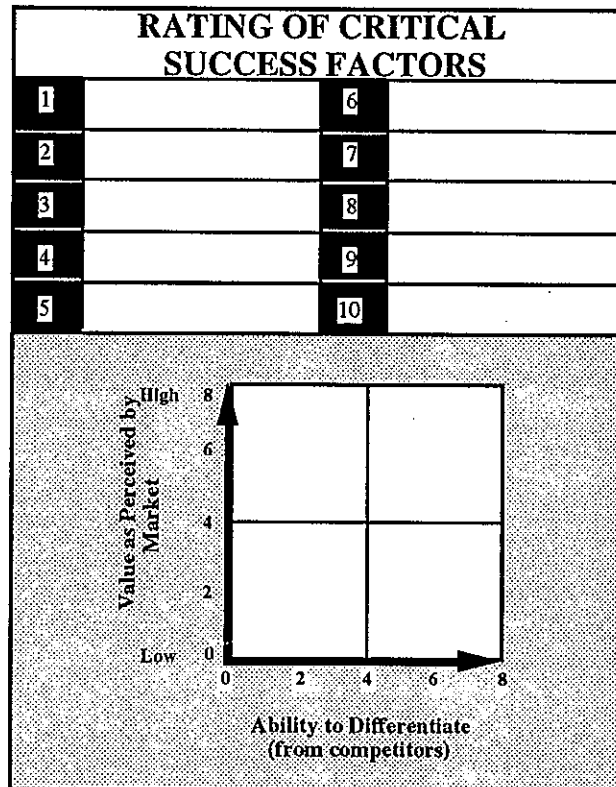
STEP 2

Once they have been positioned on the matrix, those factors which receive 'high' rankings are further appraised in terms of potential for tangible impact on the behaviour of members of the industry. Where this is also 'high', the factor should be highlighted by circling the position on the matrix.

STEP 3

This evaluation of the critical success factors from both a market and end-user and competitor perspective, points to those factors that are likely to be the source of the industry's sustainable competitive advantage.

Any factors which fall in the upper left hand quadrant indicate those factors which the market values highly but which are not effectively provided by the particular competition. These factors could be referred to as competitive disadvantages.



APPENDIX III

GLOSSARY

TERMINOLOGY

LTFR	—	Low Temperature Fat Rendered
Edible	—	Manufactured from edible by-products of meat processing
Inedible	—	Manufactured from inedible by-products of meat processing
Talloil	—	Blended/recycled tallow and vegetable oil
J.I.T.	—	Manufacturing supply term “just-in-time”
FFA	—	Free fatty acids, reported usually in percentage of oleio acid
BSE	—	Bovine Spongiform Encephalopathy (“mad cow disease”)
Titre	—	Solidificaiton point of fatty acids in degrees centigrade

ORGANISATIONS

BAE	—	Bureau of Agricultural Economics
AMLC	—	Australian Meat & Livestock Corporation
AMLRDC	—	Australian Meat & Livestock Research and Development Corporation
ABS	—	Australian Bureau of Statistics
CSB	—	Commodity Statistical Bulletin, ABARE
AOSF	—	Australian Oil Seeds Federation
ABARE	—	Australian Bureau of Agricultural & Resource Economics
EPA	—	Environmental Protection Authority
ARA	—	Australian Renderers Association
SFMAA	—	Stockfeed Manufacturers Association of Australia

APPENDIX IV

REFERENCES

- PORTER & WEEKS, BAE 1983
The Market for Australian Livestock By-Products, Occasional paper No. 80, Project 2041
BAE, 1983
- HAYWARD & SPENCE, AMLC 1982
By-Product Production in Australia 1984-1989
Australian Meat and Livestock Corporation 1982
- WELLS & WHITEFORD, AMLRDC< 1990
The Development of Monitoring and Forecasting Procedures for the Australian Livestock
By-Products Industry
AMLRDC, October 1990
- SPOONCER, CSIRO, 1992
By-Product Yields for Sheep and Cattle
CSIRO, Feb 1992
- CSB, 1990/1992
Commodity Statistical Bulletin
Australian Bureau of Agricultural and Resource Economics, Canberra
- ABS
Australian Bureau of Statistics
(various publications and data searches)
- AMLC, 1989
Industry Policy Council Study
Animal By-Products
- Foreign Agricultural Service, USDA
Commodity and Marketing Program
Dairy Livestock and Poultry Division
United States Department of Agriculture
- Oil World Annual
Ista Mielke & Co.
- FAO
Food & Agricultural Organisation
United Nations
Commodity & Review Outlook
- QLMA
Queensland Livestock & Meat Authority
- AQIS
Australian Quarantine Inspection Service
- EPA
Environment Protection Authorities
(various states)

- Retail World, 1992
Australian Grocery Industry Marketing Guide
- BIS Shrapnel, 1992
The Australian Food Services Market
Third Edition, 1992
- AMLC Stat. Review
AMLC Statistical Review
- IAC 1982
Industry Assistance Commission
Meat Industry Report
- ARA
Australian Renderers Association
- INFORM, 1992
Inform
Vol 3, Feb 1992
- GRAIN 2000, 1991
Australian Oil Seeds Federation
Grain 2000 Conference Proceedings
- BROWN, Linden
Competitive Marketing Strategies
Page 220
- ARQ, 1992
Agriculture & Resources Quarterly
Australian Bureau of Agricultural & Resource Economics, Canberra
- Degussa, 1992
(review information supplied by Degussa, Australia)