

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

1995 – 2000



PRIMARY INDUSTRIES
SOUTH AUSTRALIA



**SOUTH AUSTRALIAN
RESEARCH AND
DEVELOPMENT
INSTITUTE**

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

December 1995

This plan is a working document for consultation and negotiation between PISA/SARDI and other industry stakeholders. That consultation is crucial in assisting PISA/SARDI to progress this strategic plan into operational plans for implementation in 1996/97.

EXECUTIVE SUMMARY	1
1 INDUSTRY VISION	8
2 PURPOSE OF THE WOOL INDUSTRY PLAN	8
3 INDUSTRY PERSPECTIVE	9
3.1 Definition of the Wool Industry	9
3.2 Industry Profile	9
3.2.1 World Production and Trade Trends	9
3.2.2 Production and Export Profile: Australia	13
3.3 Special Features of the Industry	24
3.4 Departmental Inputs/Programs, Projects	27
4 WOOL INDUSTRY ECONOMICS AND MARKETING	29
4.1 Wool Economics	29
4.2 Returns to Wool Producers	31
4.3 Competitiveness of the Wool Enterprise	32
4.4 Summary of IWS Forecasts for the Wool Industry to 2004	34
5 ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS	37
6 OPPORTUNITIES AND ROLES ANALYSIS	46
6.1 Enhancing Market Development of the Wool Industry	46
6.2 Enhancing Product Development and Innovation within the Wool Industry ...	47
6.3 Improve Wool Quality	48
6.4 Maximising Cost/Price Competitiveness of Wool Production	48
6.5 Improving Sustainability of Wool Production	50
7 APPENDICES	53
Appendix 1: World Production of Fibres, 1989-94	53
Appendix 2: Relocation of Combing Capacity	54
Appendix 3: Australian Top Making Expansion Already Committed	54
Appendix 4: Relocation of Spinning Capacity	55
Appendix 5: Weaving Capacity Shifts	55
Appendix 6: Mean Values of Staple Fibre Properties	56
Appendix 7: South Australian Wool Production	57
Appendix 8: Australian Wool Production	57
Appendix 9: South Australian Wool Values	58
Appendix 10: Australian Wool Values	58

Appendix 11: Percentage Distribution of Fibre Diameter for Wool Sold in South Australia and Australia as a whole	59
Appendix 12: Wool Qualities and Quantity by Area in SA: 1989-90 to 1993-94	60
Appendix 13: Exports of South Australian Wool for 1993-94 season	61
Appendix 14: Annual Greasy Equivalents from Australia - Mass	62
Appendix 15: Annual Greasy Equivalents from Australia - Value	63
Appendix 16: Opportunity Values for Programs Investigated by PISA and SARDI	64
Appendix 17: Acknowledgments	66
Appendix 18: Bibliography	67

EXECUTIVE SUMMARY

INDUSTRY VISION

The farm sector of the South Australian wool industry will increase its sustainable gross value of production from \$356 million in 1994/95 to \$500 million in 2005.

This will mean:

- returns to growers will increase;
- producers focusing on meeting the requirements of customers and adapting to changes in those requirements;
- operating under production systems that are sustainable and consistent with the environmental goals of society;
- the industry will be more innovative and excellent in a technical and managerial sense.

PURPOSE OF THE WOOL INDUSTRY PLAN

The major purposes of the PISA/SARDI Industry Planning process are, in conjunction with the Industry, to:

- a examine existing industry structures and processes (such as marketing arrangements, relevant legislation and so on) and to determine their strengths, weaknesses, opportunities and threats. This will enable us to determine the critical factors that enhance or impede the international competitiveness of the industry in South Australia, and consider industry strategies to address those factors, and
- b determine and evaluate the major opportunities for sustainable economic development in our industries, and the role of PISA/SARDI in assisting industry to capture those opportunities. By aligning our resources in PISA/SARDI to reflect the identified opportunities, we will maximise our impact as an economic development agency.

This Plan concentrates on economic development opportunities over the period 1995-2000.

INDUSTRY PERSPECTIVE

Over the past decade, South Australia's annual greasy wool production has ranged from 100 to 136 million kg, with a gross value ranging from \$260 million to \$612 million. The forecast wool production in SA for 1994/95 is down to 98 million kg. Gross value per annum averaged \$410 million for the 10 years ending in June 1994. This is approximately 25% of the farm gate gross value of agricultural production (excludes Fisheries and Forestry). Off-farm added value for the SA wool industry is \$124 million per annum. Co-products of the wool industry include mutton, sheep skins, live sheep and breeding ewes for prime lamb enterprises.

Most SA wool is between 22 to 25 microns, with the 5 year average of 23.6 microns being 1.2 microns stronger than that of the Australian wool clip. South Australia has, by far, the greatest percentage of strong wool (greater than 22 microns) of all Australian states. The area of origin within South Australia that the wool comes from does not make a large

difference to the fibre diameter, with the high rainfall areas in the South East of the state, the Northern areas, Murray Lands, Eyre, Yorke and Lower North being in the same range.

South Australian wools have a lower staple strength, on average, than Australia as a whole (33.4 versus 35.5 newtons/kilotex). Although this difference is minor, it does indicate room for improvement, especially when viewed with the fact that South Australian wools are also broader than the Australian average.

Over the last 5 years, the average Australian wool price paid has been 14% higher than that for South Australia. However, given the higher wool cuts of South Australian sheep, the value of wool production per head of SA sheep has often been similar to that of sheep in other states.

The price premiums of 23 microns over 24 (5%), 22 microns over 23 (9%) and 21 microns over 22 (8%) micron wools since the end of the Reserve Price Scheme in 1991 represent a significant opportunity to lift returns if fleece weights are not sacrificed in the process.

Approximately 41%, 39% and 19% of sheep in South Australia are in the cereal, high rainfall and pastoral zones, respectively. For South Australia as a whole, 27% of the sheep are contained on the 5% of the properties which have over 5,000 sheep. Furthermore, 63% of the sheep in the state are run on the 26% of properties which have 2,000 sheep or more, and 37% of all sheep in the state are grazed on the remaining properties (74%) which have less than 2,000 sheep.

SOME KEY INDUSTRY DRIVERS

- Wool now accounts for only 4% of total textile consumption but it holds around 67% of the market for men's suits, 38% for women's coats and men's jackets and 28% for men's knitwear;
- Australia is the world's largest wool producer (producing 31% of the total) and is the largest exporter, accounting for 60% of all wool exports;
- There is a long pipeline of processing steps for wool, most of which are independently owned. Feedback across all steps has been poor, although it has been improved to some extent in recent times by actions of the industry and the International Wool Secretariat;
- Trends towards higher speed processing and less labour, plus a fashion trend towards lightweight and casual clothing, reduced "prickle" and soft handling all favour wools below 23 microns. SA is not currently well-placed to take advantage of these changes. SA produces only half the proportion of wool in the 21 micron category as the national average, and a third as much in the 20 micron category;
- Although greater specification of the wool clip will help overcome the advantage cotton and synthetics have in consistency in performance, much greater efforts are needed to overcome the disadvantage of contamination of the wool clip. These efforts have commenced with the introduction of Quality Assurance Programs, such as "Clip Care", but there is a long way to go;
- There are currently (June 1995) around 3 million farm bales in the wool stockpile held by Wool International. The stockpile is predominantly 22 to 24 micron wool and is the equivalent of 58% of annual wool production in Australia;

- Wool prices are forecast by the International Wool Secretariat (IWS) to improve in the medium term (over next 5 years), although with some volatility depending on the world economy and wool availabilities. In the longer term (1999 onwards), prices are forecast by IWS to be higher, with lower wool availability, and
- Farm numbers will continue to fall, but the majority of sheep farmers will still have less than 2,000 sheep. As the industry develops closer links with marketing outlets, smaller non-specialist producers will find it difficult to meet market requirements and make acceptable returns.

INDUSTRY DEVELOPMENT

This Plan identifies five broad factors that are critical to the success of the SA wool industry in enhancing its international competitiveness and achieving its vision.

1 Market Orientation/Development

Market orientation requires a total commitment to the supply of products and services to overseas customers to the required specification, quantity and delivery time demanded by the customers. A commitment to export is sustained by a thorough understanding of customer needs and trends and an equally thorough understanding of the products and services provided by major international competitors.

Key industry strategies to foster a greater marketing orientation include:

- provision of better market intelligence, information and analyses;
- further understanding of trade issues in major markets;
- further consideration of joint venture or supply contract opportunities. Develop closer links with market outlets;
- evaluate/develop/promote alternative marketing arrangements, and
- education, both formal and informal.

2 Product Development and Innovation

Product development and innovation can be considered as two major objectives of research and development. Innovation is a critical factor in developing international competitive advantage.

Australian product development and innovation must remain clearly focused on market requirements.

Industry strategies which can be implemented to address the issues of product development and innovation include the following:

- Industry stakeholders can further improve their market focus through overseas travel and invitations to overseas marketers and researchers to visit Australia and provide their perspective, and
- Develop wool products or blends to reflect exactly what specific markets require.

3 Quality

The issue of quality in the wool industry refers to the need to continually maintain quality standards required by the customers in the market. Being able to constantly produce the quality, clean wool the market requires is critical to our success in international markets.

This issue needs constant attention if Australian wool is to become more internationally competitive in the world fibre market.

Key industry strategies appropriate in this respect include:

- instituting/maintaining quality assurance programs;
- improving communication of the requirements of the market place from the overseas/domestic buyers to agribusiness and producers;
- discouraging the pooling or masking of returns along the wool pipeline as this does not encourage any change in product quality. Market signals must be clearly transmitted throughout the marketing chain, and
- employing research, development and extension resources to improve wool quality.

4 Cost/Price Competitiveness

Cost/price competitiveness relates to a range of factors including the cost of production, productivity, market prices and industry structure and coordination.

In relation to cost/price competitiveness Australia and its major competitors all have different advantages and problems. The low cost wool producers like Australia have the advantage of cheaper production costs. However, they are sometimes less cost competitive in other areas, incurring greater costs in other sections of the marketing chain. Ensuring that all agribusinesses - input suppliers, transporters, processors, marketers - operate to world's best practice is a critical ingredient in the international competitiveness of our wool industry.

Key industry strategies to address issues of cost/price competitiveness include:

- reviewing regulations/policies impacting on all industry sectors;
- encouraging agribusinesses to avail themselves of available State and Commonwealth Government programs to enhance their efficiency and effectiveness as input suppliers, transporters, processors and marketers;
- continue to foster industry cooperation and organisation for the purposes of research and development, and technology and information transfer;
- industry and individual enterprises at all stages of the production and marketing chain undertaking or updating benchmarking studies to determine their deficiencies and introducing world's best practices to address these;
- recognising the importance of infrastructure and of investing in creating or upgrading that infrastructure;

- employing research, development and extension resources to improve cost/price competitiveness through productivity enhancement at all stages of the production and marketing chain;
- continuing support for the specialised university/educational programs operating in South Australia such as the Waite Campus, and
- supporting micro-economic reform.

5 Sustainability

Sheep farming impacts on soil, water and other natural resources in South Australia. The health and welfare of the flock is essential for a sustainable industry.

Industry strategies are aimed at ensuring a sustainable wool production system in accord with the environmental concerns of the general community and include:

- understanding land and water management issues and how they impact on productivity and degradation of the natural resources, and taking appropriate action;
- appreciating the consequences of the control of pest animals and plants, and taking appropriate action, and
- maintenance of productivity and export markets by ensuring the health of the flock, and residue free wool.

PRIORITY ACTION AREAS FOR PISA/SARDI

By addressing key strategies, this Plan identified the following as potential priority program areas for action by PISA/SARDI:

- Improve grower profits through greater understanding of wool market intelligence and analysis;
- Improve grower knowledge of alternative pricing and selling strategies;
- Introduce niche marketing concepts to increase share of world fibre market;
- Attract premium prices through the adoption of Total Quality Management systems;
- Increase returns to growers and industry through the use of objective measurements that enable accurate prediction of processing performance;
- Development of new products/blends;
- Genetically improve wool quality (reduce fibre diameter, improve staple strength and style);
- Improve wool quality via farm management practices;
- Maximise pasture productivity;

- Increase profits by improving farm clip preparation;
- Later lambing;
- Lambing percentage improvement;
- Drought strategy, and
- Disease surveillance.

Disease surveillance is the process of assessing all available livestock disease information to prevent production or market losses of farm animals in South Australia. It also includes assessment of zoonoses (animal disease transmissible to humans), foreign animal diseases and product residues.

- Disease control
 - These programs are designed to eradicate or minimise an existing disease or residue;
- Animal and plant control
 - This program provides for the protection of resources for wool production by supporting the control of animals and plants that are, or may become, problems;
- Farm chemicals
 - This program ensures there are suitable, effective and safe stock medicines available to growers to protect sheep from pests and diseases and thus enhance productivity;
- Water management
 - Stocking rate of some grazed land in the 400-600 mm rainfall zone is reduced due to salinisation occurring as a result of rising watertables (dryland salinity). A range of whole catchment management and agronomic strategies can be implemented to prevent further spread and to reduce existing impacts through land reclamation;
- Land management
 - To protect and enhance the soil and land resource for the sustainable development of the wool industry, and
- Revegetation
 - This program facilitates the strategic use of perennial vegetation to enhance rural industries and the environment by protecting stock, crops, soil and water, diversifying incomes and enhancing biodiversity.

Actual projects that will be undertaken by PISA/SARDI within these potential program areas will be identified at the next stage of the PISA/SARDI planning process. Projects will be evaluated against criteria such as market failure and their benefit/cost ratios to assist in the prioritisation of projects for funding.

Summary of critical success factors, industry strategies and potential PISA/SARDI actions

Critical Success Factor	Industry Strategy	Potential PISA/SARDI Programs
Market orientation/development	<ul style="list-style-type: none"> Provision of better market intelligence, international analysis Evaluate/develop/promote alternative marketing arrangements Develop closer links with market outlets 	<ul style="list-style-type: none"> Facilitate greater understanding of wool market intelligence Improve grower knowledge of alternative selling arrangements Objective measurement to predict processing performance Introduce niche marketing concepts to producers
Product development and innovation	<ul style="list-style-type: none"> Development of new products 	<ul style="list-style-type: none"> Development of new products/blends
Quality	<ul style="list-style-type: none"> Employ R&D and extension resources to improve wool quality 	<ul style="list-style-type: none"> Institute quality assurance programs Genetically improve wool quality Farm management practices Improve farm clip preparation
Cost/price competitiveness	<ul style="list-style-type: none"> Employ R&D and extension resources to improve cost/price competitiveness 	<ul style="list-style-type: none"> Benchmarking Maximise pasture productivity More efficient wool harvesting Later lambing Drought strategy Improving lambing percentage in flock
Sustainability	<ul style="list-style-type: none"> Maintenance of productivity and export markets by ensuring the health of the flock and residue free wool Appreciating consequences of pest animal and plant control Understanding consequences of land and water management issues 	<ul style="list-style-type: none"> Disease surveillance Disease control Farm chemical regulations Pest animal and plant control Water management Land management Revegetation

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

INDUSTRY VISION AND PURPOSE OF THE WOOL INDUSTRY PLAN

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

1 INDUSTRY VISION

The farm sector of the SA wool industry will increase its sustainable gross value of production from \$356 million in 1994/95 to \$500 million in 2005.

By the year 2010, the wool industry in SA to be:

- more focused on the needs of customers;
- more concerned with delivering quality wool (quality in the full sense, including meeting specification in all aspects, delivery on time etc.);
- producing and processing wool with minimal impact on the environment;
- more viable, profitable and competitive;
- more responsive, flexible, resilient and robust (has reserves to invest etc.);
- more innovative and excellent in a technical and managerial sense, and
- more skilled and have more educated and more resourceful personnel.

2 PURPOSE OF THE WOOL INDUSTRY PLAN

The main purposes of the PISA/SARDI Industry Planning process are to, conjunction with industry;

- a examine existing industry structures and processes (such as marketing arrangements, relevant and legislation and so on) and determine their strengths, weaknesses, opportunities and threats. This will enable us to determine the major factors that enhance or impede the international competitiveness of the wool industry in South Australia, and consider industry strategies to address those factors, and
- b determine and evaluate the major opportunities for sustainable economic development in our industries and the role of PISA/SARDI in assisting industry to capture those opportunities. By aligning our resources in PISA/SARDI to reflect the identified opportunities, we will maximise our impact as an economic development agency.

This plan concentrates on economic development opportunities over the period 1995-2000.

3 INDUSTRY PERSPECTIVE

3.1 DEFINITION OF THE WOOL INDUSTRY

For the purposes of this plan, the wool industry of South Australia includes all wool produced and processed in the state. The stakeholders include:

Woolgrowers and ram breeders

Wool marketers and processors

Service Providers and Input Suppliers (public and private)

- brokers;
- financiers;
- input suppliers and merchandisers;
- consultants/sheep classers;
- PISA/SARDI;
- Grower bodies (South Australian Farmers Federation - SAFF etc);
- International Wool Secretariat, Wool International;
- CSIRO;
- TAFE/Universities, Schools (Rural Certificate Courses), and
- Cooperative Research Centre for Premium Quality Wool.

Activities related to animal health, pasture productivity, stubble management, management of soil and water resources etc which impact on the SA wool industry are part of this SA Wool Industry Development Plan. However, this plan excludes the value of sheep meat (including live sheep exports), skins and sheep leather, which are the subject of a SA Sheep Meat Industry Development Plan.

3.2 INDUSTRY PROFILE

3.2.1 World Production and Trade Trends

Critical Issues:

- ***Textile production quadrupled since 1951***
- ***Wool's share is now only 4%***
- ***Wool still holds large share in apparel ware***

The world production over the last 5 years of the main fibres used in textiles is shown in Appendix 1.

Wool currently accounts for around 4% of the world production of textile fibres.

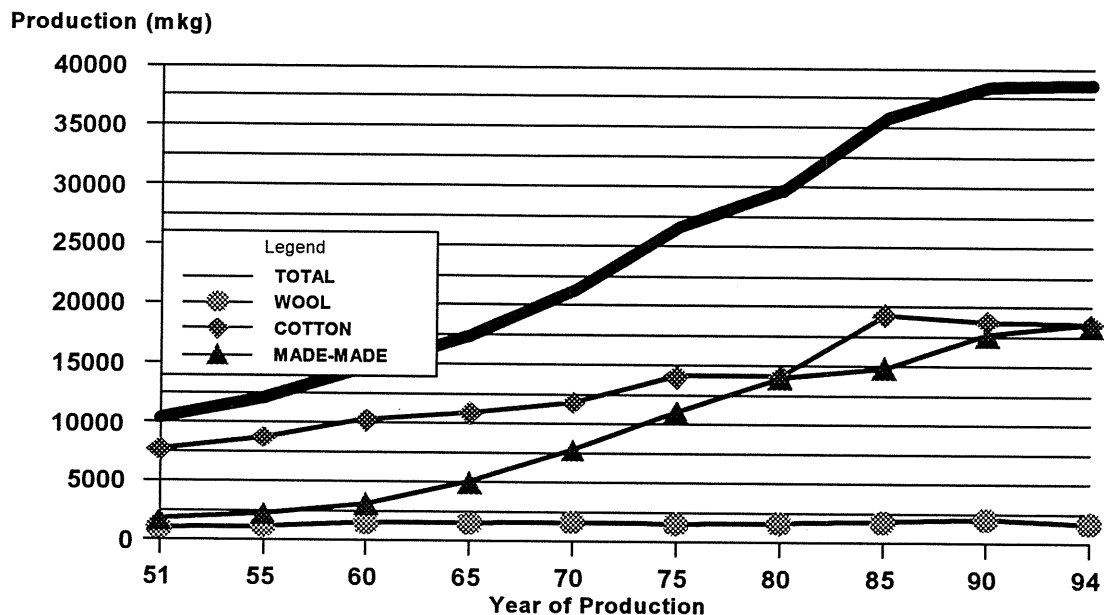
Back in 1950/51, of 10,332 mkg of textile fibres produced, 1,049 mkg (10%) were wool, 7,619 mkg (74%) cotton and 1,665 mkg (16%) were man-made fibres. Figure 1 shows textile fibre production quadrupling between 1951 and 1994. Wool has declined in proportional terms, despite an increase in actual production until 1990. Over this period large markets have developed in industrial, home, medical and textile products, such as tyre cords, ropes and cordage, seat belts, canvas, tarpaulins, towelling, bed sheets and the like, for which wool is quite unsuitable. To conclude that wools' market share is at a

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

INDUSTRY PERSPECTIVE

dangerously low level would therefore be incorrect. For example, in the major textile consuming countries, wool holds 67% of the market for men's suits, 38% for women's coats and men's jackets and 28% for men's knitwear (McPhee, IWS, 1993).

Figure 1: World production of the main textile fibres, 1950-51 to 1993-94



Processing

Critical Issues:

- Long pipeline of processing steps
- Most steps independently owned
- Feedback across all steps has been poor
- "Lag" in signals along pipeline

For greasy wool to be converted into finished product, a large number of processing steps are involved. For combing wools, the steps include scouring, carding, gilling, combing (top-making), dyeing, spinning weaving or knitting and garment making.

These steps are often performed by different companies each with their own production and marketing structure, with little vertical integration beyond one or two steps, for example scouring and combing. This long "pipeline or chain" of separate operators processing wool from the raw state to finished product makes accurate and rapid feedback across all steps difficult and time-consuming. Wholesaling and retailing of garments add more steps to the process. A sluggish response to market trends and customers needs is often the outcome.

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

INDUSTRY PERSPECTIVE

The predominant wool-producing and wool-exporting nations are in the Southern Hemisphere, whilst traditionally, the processors of wool (and a large percentage of consumers) are based in the Northern Hemisphere.

Early stage processing

Critical Issues:

- *Relocation of early stage processing:
Europe and Japan decreasing
China, SE Asia & Australia increasing*

A trend towards re-location of early and latter stages of processing of wool to SE Asia and China in particular is apparent, to capitalise on lower labour costs and less stringent pollution controls.

According to the International Wool Secretariat, in general, wool growing countries (including Australia) are likely to be increasing their proportion of world combing capacity as Europe and Japan shed capacity. There is likely to be an increasing concentration of world combing capacity given:

- there is world over-capacity at present;
- there is committed expansion in Australia, and
- the likely reduction in the volume of wool following the depletion of the Australian wool stockpile.

Appendices 2,3,4 and 5, show, respectively, combing capacity by countries, Australian top making expansion already committed, relocation of spinning capacity and weaving capacity by countries.

Trends in fashion and processing

Critical Issues:

- *Trend to light-weight apparel and soft-handling fabric*
- *High processing speeds, less labour*
- *Trends favour below 23 micron wools and high fibre strength*

Fashion trends are towards lighter-weight fabrics, softness and ability to be worn against the skin.

Processing trends are also towards increasing speeds and lower labour requirements. This requires more fibres in the yarn to give it strength.

These trends have important implications for raw wool. These are, for apparel wools, a favouring of wools finer than 23 microns (Plate, 1992 and Whiteley, 1992). South Australia is not well placed to capitalise on these trends because of the broad nature of most SA wool.

How do wool's competitors compare?

Critical Issues:

- *Wool has advantages over other fibres*
- *Wool has relatively low fibre strength & can be prickly*
- *Wool to cotton & polyester price ratios are important*

Appendix 6 shows the basic specifications of textile fibre characteristics. Wool has advantages in insulating properties, moisture absorption, appearance retention and softness compared to other fibres but has relatively low fibre strength. Further, some wools can evoke a "prickle" sensation (Garnsworthy *et al.*, 1988). Synthetic fibres are now finer than previously, to achieve softness (Plate, 1992).

From Appendix 6 it can be seen that synthetic fibres are from two to four times stronger than wool. The break elongations for most of the fibres listed are similar to that of wool, and are therefore suitable for blending with wool. The well-known contribution of acrylic fibres to loft and lightweight warmth is explained to some extent by low fibre density in contrast to wool and most polyesters. Of course, wool contributes to fabric warmth through other mechanisms, such as its unusual crimp, which gives fabric bulk, and low surface contact area.

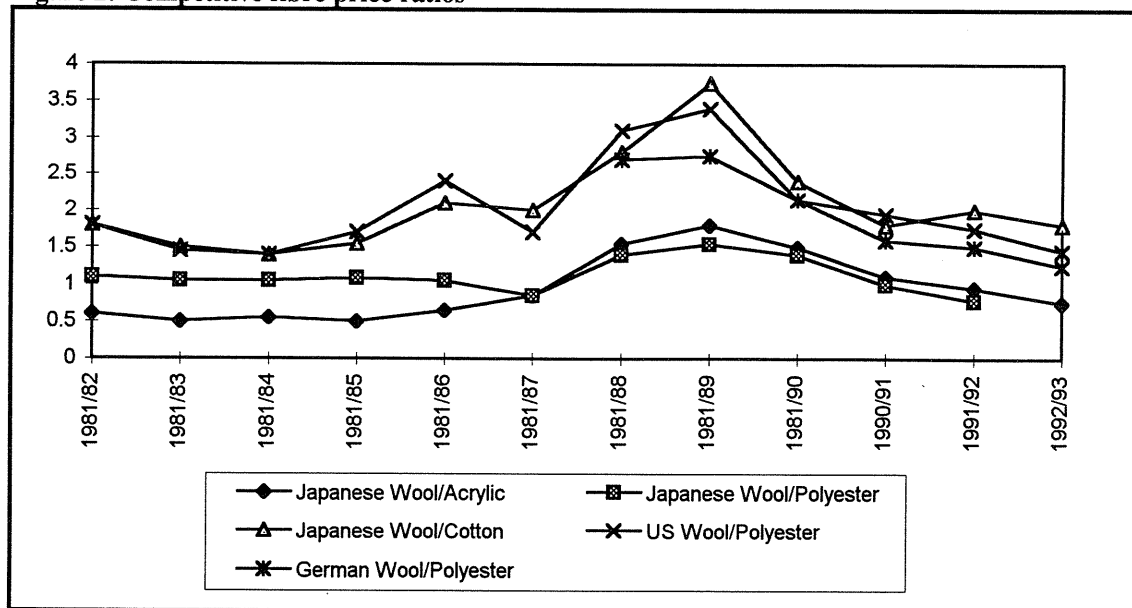
All of the synthetic fibres listed in Appendix 6 are thermally stable (resist softening) above the scorching temperature for wool. It should be noted, however, that severe thermal damage such as that associated with melting, or charring, occurs at lower temperatures for most of the synthetic fibres than for wool.

A comparison of the ratio of wool prices to the prices of its main competing fibres over the last 12 years is shown in Figure 2. During the wool price spike of the late 1980s, the ratio of wool to cotton prices and the wool to polyester prices in Western Europe and the United States went as high as 5 is to 1. This ratio, together with a world-wide recession, precipitated substitution of cotton and polyester for wool in a number of end uses, ultimately reducing demand and prices for wool.

Cotton and synthetics are spun at much higher speeds than wool and have a number of other processing advantages partly because of their strength. They also currently have the important advantage of consistency in terms of performance and freedom from contamination. Prediction of processing performance of wool for large batches of mixed origins largely overcomes the inherent variability in wool fibre properties but much greater effort is needed to improve the situation with regard to contaminants (Whiteley, 1992).

Serious attempts to reduce contaminants in wool clips are now being made through various quality assurance programs, such as Elders Clipcare (Vandeleur, 1995) and Dalgetys Dalcare plus a number of grower group schemes (Metcalf, 1995). However, these schemes so far only incorporate a small percentage of the total Australian and South Australian wool clips. For instance, in Western Australia, it is estimated that around 5 to 6% of the WA wool clip is subject to a quality assurance scheme.

Figure 2: Competitive fibre price ratios



3.2.2 Production and export profile: Australia

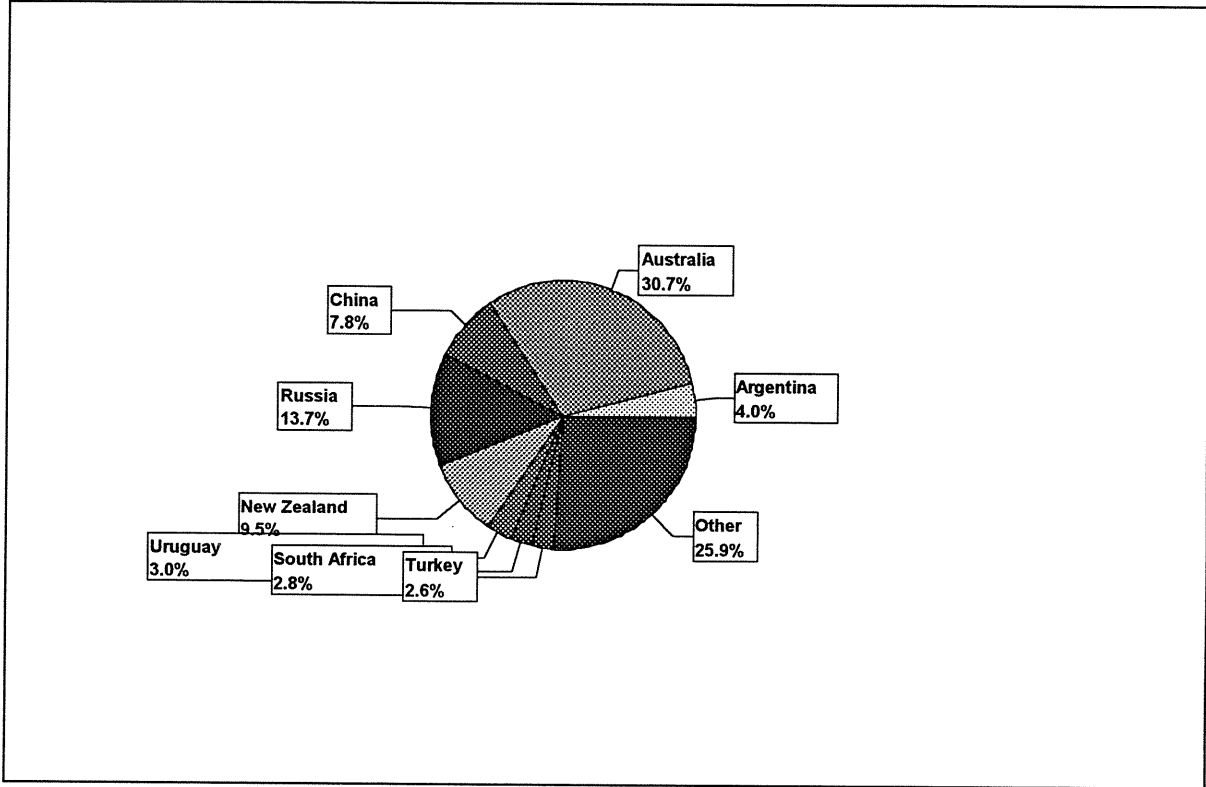
Critical Issues:

- *Australia is the largest wool producer*
- *Also the largest exporter*
- *Reserve price scheme ended 1991*
- *Stockpile peaked at 4.5m bales*
- *Industry now in recovery phase*

Australia is both the largest producer and the largest exporter of wool in the world. It accounts for 31% of world output and 60% of all wool exports. (See Figure 3 for wool production by country and Figure 4 for export volumes by country).

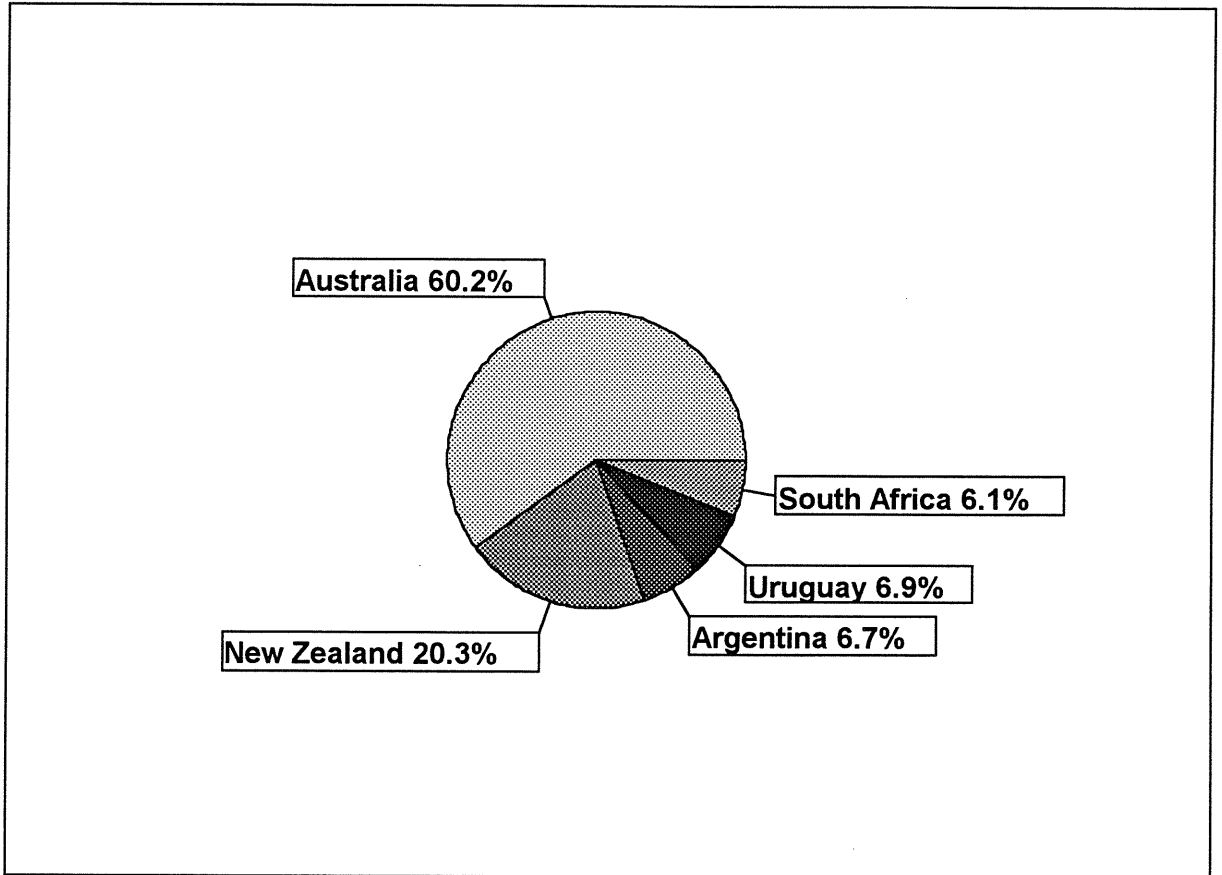
The downturn in the wool industry since 1991 has been due to a world recession, especially among major wool-buying nations, and high prices for wool augmented by the reserve price scheme. The factors related to the world recession include the collapse of the former Soviet Union, the re-unification of Germany, a general recession in Western Europe and Japan and a short-term disruption in trade with China. These events helped precipitate the collapse of Australia's reserve price scheme, which had amassed a stockpile of 4.5 million bales of wool by the time the scheme was suspended in early 1991. The stockpile is now being sold according to a fixed quantity selling schedule ending in June 1997.

Figure 3: Estimated annual greasy wool production of the major wool producing countries (1989-90 to 1993-94)



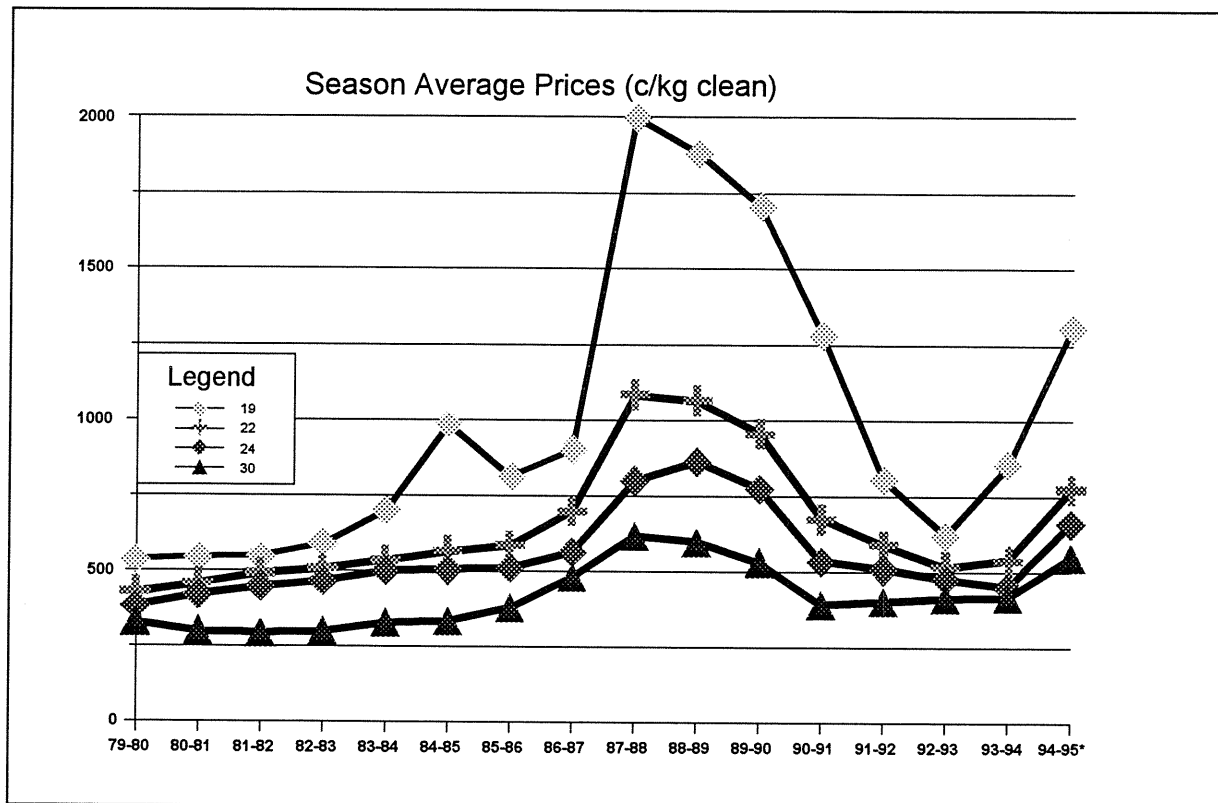
Source: International Wool Textile Overview

Figure 4: Annual raw wool exports by main producing countries equivalent, 1989-90 to 1992-93



Source: ABARE, Commodity Statistical Bulletin, 1993

Figure 5: Prices of Australian wool over the last 16 years



Source: Wool International NB: 1994/95 season up to June 16, 1995

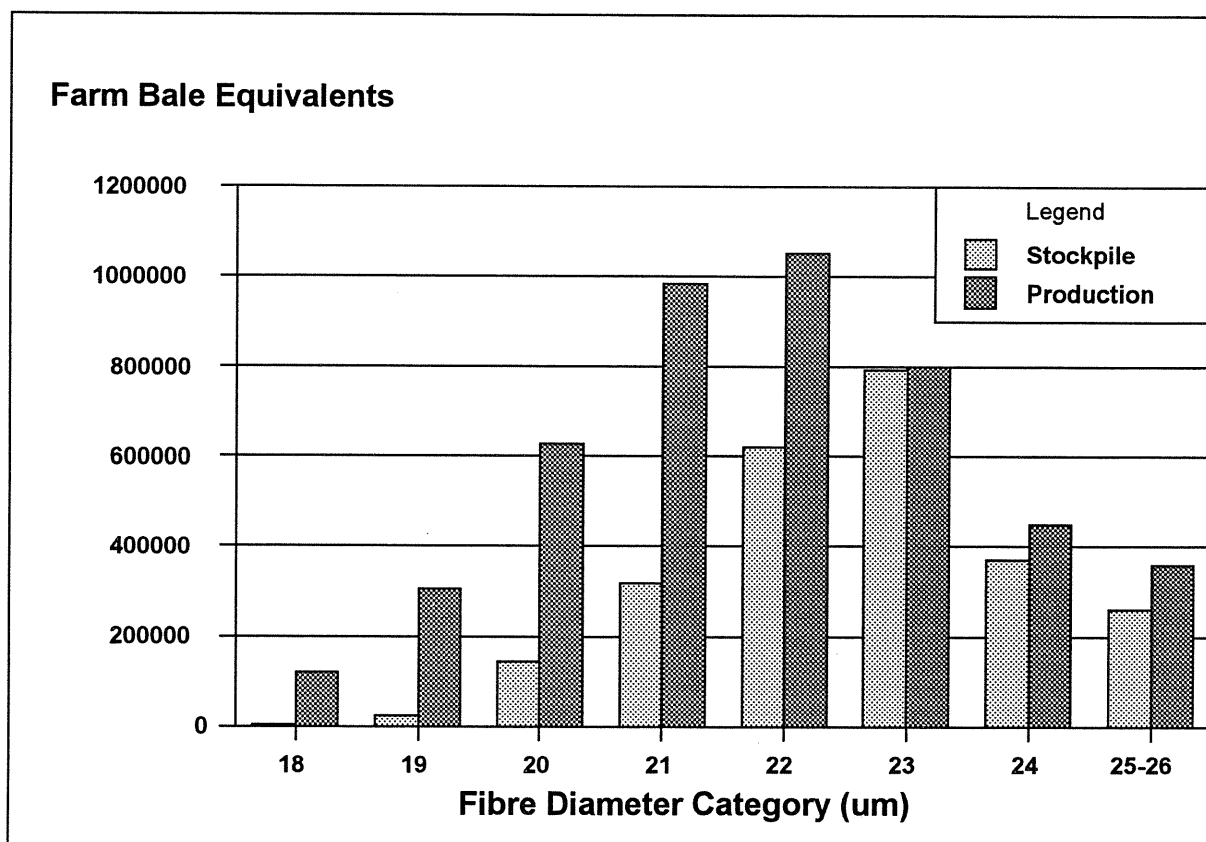
Critical Issues:

- Stockpile contains 3 million bales
- 58% annual production in stockpile
- Most stocks are 22-24 micron

Wool International Stockpile holdings by fibre diameter category are shown in Figure 6 (as at May 26th, 1995). Also shown is the Australian 5 year average production by fibre diameter category.

As at May 26, 1995, the Wool International Stockpile totalled 3,035,398 farm bale equivalents (around 530 million kg, or around 58% of Australia's annual wool production over the last 10 years).

Figure 6: Stockpile holdings of combing wools and 5-yr average Australian annual wool production by fibre diameter category.



Source: Wool International

Whilst stockpile wools generally overhang the market, its composition needs to be examined to see which wools are likely to be most affected. Relative to normal production of 21, 20, 19 and 18 micron and finer wools in Australia, there is less than 33%, 23%, 8% and 1 per cent, respectively, of a year's supply in the stockpile. However, for 22, 23, 24 and 25-26 micron wools, there is over 59% , 99%, 82% and 72% respectively, of a year's supply in the stockpile (see Figure 6). This has particular relevance to South Australian wools (see below).

South Australia

Critical Issues:

- *SA produces 110 mkg greasy of wool*
- *SA production valued at \$379m (5 year average)*
- *1993/94 production only \$260m*

Appendices 7 and 8 show the wool produced and sheep shorn in South Australia and Australia over the last 10 year period, respectively. Averages for the last 5 and 10 year

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

INDUSTRY PERSPECTIVE

periods are also given. Appendices 9 and 10 show the value of wool produced in South Australia and Australia, respectively.

Over the last decade, South Australia produced an average of 110 million kg of shorn greasy wool each year, with a range from 98 to 127 mkg. About 7 mkg of fellmongered and other wool was also produced each year. Total annual wool production has a value of \$379 million (5 year average), with a range from \$260 million to \$612 million a year. Furthermore, sheep in SA produced 14.5% more wool per head than the Australian average over the last 10 year period.

Off-farm added value for the SA wool industry is \$34 million per annum, with an extra \$90 million per annum being contributed by the scouring, carbonising and top-making operations of G.H. Michell and Sons Pty Ltd at Salisbury.

Genetic Structure of Wool Industry in SA

Critical Issues:

- ***90% of SA flock are Merinos***
- ***Most woolgrowers depend on studs for the genetic make-up of flocks***
- ***A strong hierarchy of studs exists***
- ***Breeding directions for the whole clip are set by a few large studs***

In 1989, the Merino breed made up 90.2% of the sheep flock in South Australia (ABS). No more recent figures are available. Within the Australian Merino industry, most woolgrowers buy ram replacements from ram breeders, most of which have registered studs.

For the years 1921 to 1950, Short and Carter (1955) estimated that flocks contained in the Australian Stud Merino register supplied 50-90% of annual ram requirements of the non-registered Merino population.

These rams were produced from approximately 2% of all Merino ewes in the country. Within these ram breeding flocks, a clearly defined hierarchy is apparent, comprising three levels:

- Parent studs: Defined as closed studs and sole sources of rams for one or more registered flocks.
- Daughter studs: Receive breeding stock either from one parent stud or from that stud and other daughter studs of the same parent studs.
- General studs: Derive breeding stock from more than one family group, where a family group is an assemblage or hierarchy comprising a parent stud and its attendant daughter studs.

More recent investigations have largely confirmed these estimates and structure (Banks, 1987). Genetic improvement flows down the breeding structure mainly via the rams. In this hierarchical system, selection decisions made in commercial flocks (in which ram replacements are bought) cannot affect the long-term rate of genetic progress made in the whole population ie, the ram breeding flocks and their dependant flocks.

Group breeding schemes. Most breeding structures within the wool sheep industry are basically similar. An elite group of ewes is mated separately to breed rams, and this flock

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

INDUSTRY PERSPECTIVE

is either a stud flock or it could be a nucleus formed by an individual breeder to breed his own ram replacements, or it could also be a nucleus formed by a group of people. The main difference that tends to distinguish group breeding schemes from the traditional part of the industry is that the nucleus is usually open to introductions of ewes from the base flocks it serves. If the breeding programme is efficient, this can give up to an extra 15% genetic gain over a breeding programme using a closed nucleus.

As a direct consequence of the most common and traditional structure, the genetic merit of most commercial flocks is determined by selection decisions made in a relatively few ram breeding flocks. Furthermore, the direction and rate of genetic change over time for most of the commercial flocks are also determined in these same, relatively few, ram breeding flocks.

The genetic structure of the wool industry in South Australia is similar to the situation for Australia as a whole.

Breeder organisations. All Merino breeders with registered studs are members of the South Australian Stud Merino Sheepbreeder's Association, which is affiliated with the Australian Association of Stud Merino Breeders. The Association organises a series of events each year, the main ones being the SA Merino Field Days in the mid-North of the state and a range of regional field days in the South-East, Murray Mallee, Kangaroo Island, Yorke Peninsula and Eyre Peninsula, plus the Adelaide Ram Sales. During 1994 and 1995, a Scientific Liaison Committee of the Association has become very active.

A number of stud Merino breeders and breeders involved in nucleus breeding programs are members of the SA Branch of the Australian Federation of Performance Sheep breeders, which actively promotes the use breeding and selection strategies largely based on performance recording and objectively-based methods of evaluating sheep.

Distribution of Production of SA wool by Fibre Diameter

Critical Issues:

- *SA clip 1.2µm more than Australian clip*
- *SA clip predominantly 23-25 microns*
- *Fibre diameter is similar across SA*
- *SA clip valued 14% less per kg than Australian average*

Appendix 11 and figure 7 show the percentage distribution of fibre diameter for wools sold in South Australia for the last 5 wool selling seasons (1989-1994), with 5 year averages for South Australia and Australia.

Most SA wool is between 22 to 25 microns, with the 5-year average of 23.6 microns being 1.2 microns stronger than that of the Australian wool clip. Figure 8 shows the composition of the clip by state, which clearly indicates that South Australia has, by far, the greatest percentage of strong wool (greater than 22 microns). The area of origin within South Australia that the wool comes from does not make a large difference to the fibre diameter, with the high rainfall areas in the South East of the state, the Northern areas, Murray Lands, Eyre, Yorke and Lower North being in the same range (see Appendix 12).

Appendix 12 also gives measurements of staple strength and vegetable matter content and proportion of wool of total auction sales (within the state) by areas of origin within

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

INDUSTRY PERSPECTIVE

South Australia and for South Australia and Australia as a whole. There are clear differences in staple strength and vegetable matter content between different areas of the state. However, South Australian wools have a lower staple strength, on average, than Australia as a whole (33.4 vs 35.5 newtons/kilotex). Although this difference is minor, it does indicate room for improvement, especially when viewed with the fact that South Australian wools are also broader than the Australian average.

Over the last 5 years, the average Australian wool price paid has been 14% higher than that for South Australia (see Appendix 9 and 10). However, given the higher wool cuts of South Australian sheep, the value of wool produced per head of SA sheep has often been similar to that of sheep in other states.

Table 1 shows the average prices (and premiums) received by fibre diameter categories for the 3 selling seasons (ending June 1994) since the end of the Reserve Price Scheme (RPS). As the RPS scheme influenced price relativities between micron categories, figures are presented only post RPS.

The price premiums of 23 micron wool over 24 (5%), 22 over 23 (9%) and 21 over 22 (8%) micron wools since the end of the RPS in 1991 represent a significant opportunity to lift returns if fleece weights are not sacrificed in the process.

Figure 7: Distribution of FD of wool in South Australia and Australia (1989-1994)

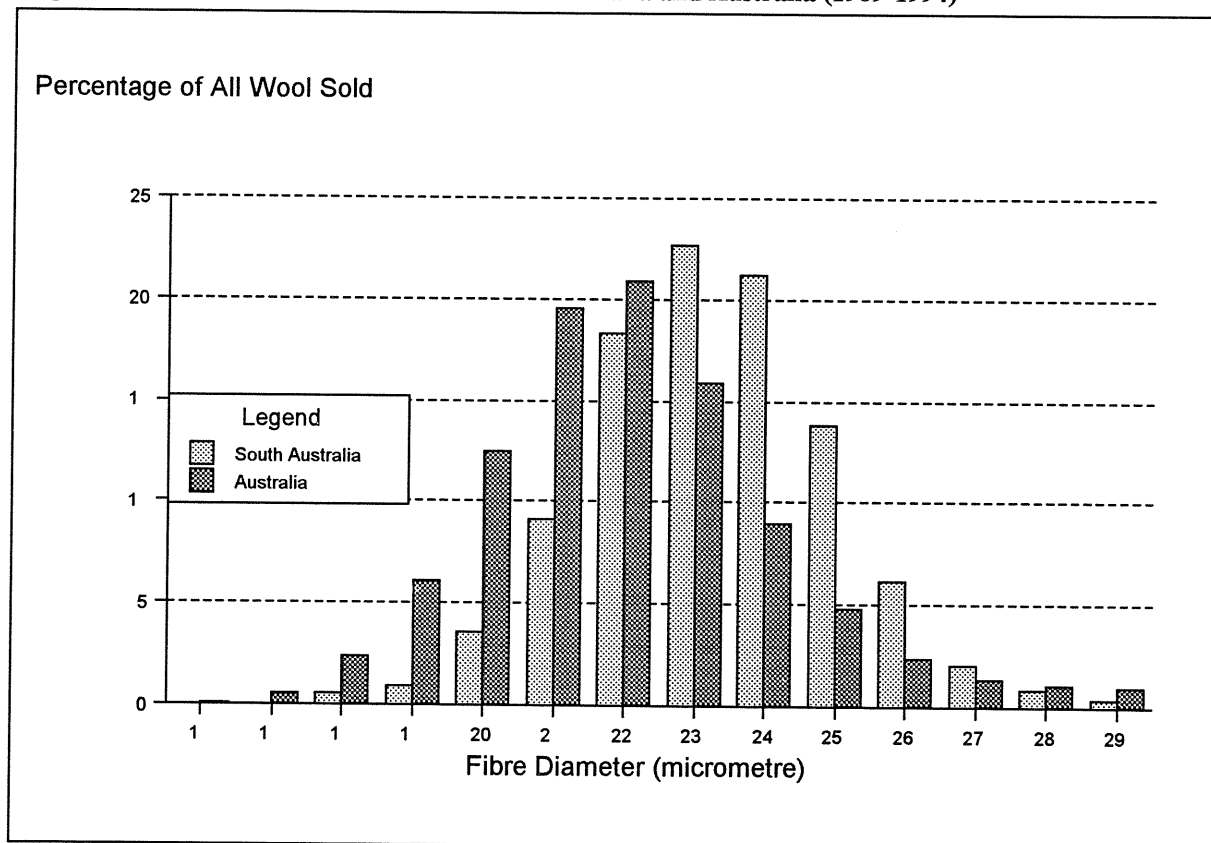
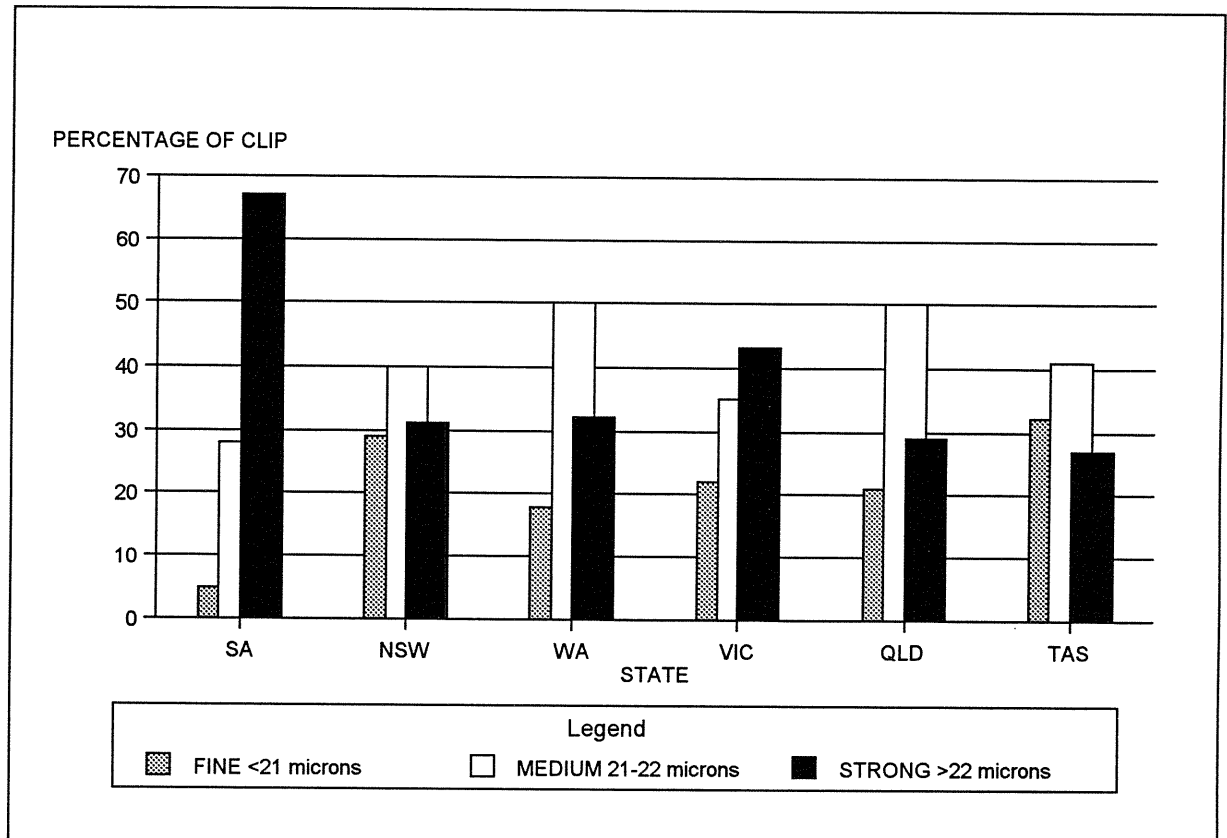


Figure 8: Composition of wool clip by state: 5 year average, 1989-90 to 1993/94



SOURCE: Australian Wool Compendium

Table 1: Average prices received for micron categories 1991/92 – 1993/94

SELLING SEASON	NATIONAL MICRON MARKET INDICATOR CATEGORY (¢/kg clean)												
	19	20	21	22	23	24	25	26	27	28	29	30	31
1991/92	801	681	630	588	544	507	478	460	445	438	421	400	380
1992/93	621	560	534	515	490	474	457	447	441	440	428	412	395
1993/94	853	697	603	536	469	450	438	427	423	423	421	414	406
Premium% [#]		17.3	9.7	7.9	9	5	4.1	2.9					

[#] Premium % is the increase (in percentage terms) of reducing fibre diameter by 1 micrometre over the clean wool price (averaged over the 3 years)

Source: Australian Wool Sales Statistics 1993-1994 Season (Wool International)

NB: Seasons 1989/90 and 1990/91 are not shown because the Reserve Price Scheme distorted differences in price between micron categories.

Export profile: South Australia and Australia**Critical Issues:**

- *China is biggest export destination*
- *Trend is away from Western Europe and Japan*
- *Italy and Japan are still important*
- *Australia now exports 16% of production in semi-processed form*

Appendix 13 shows the destination of South Australian wool by country, in order of importance, for the 1993-1994 season. A breakdown of exports of greasy wool, scoured wool, carbonised wool, tops, noils and waste wool is shown.

The values in Appendix 13 for South Australia need to be viewed together with exports of wool from Australia as a whole, which are shown in Appendix 14. Appendix 15 gives the value of exports over the same 10 year period as in Table 11. Figure 13 shows the distribution of Australia's wool exports to regional groupings of countries in 1983-84, 1993-94 and forecast figures for the year 2004.

For South Australian wool, China has become the dominant export destination. Indeed, it has also become the largest export destination for Australia, replacing Italy and Japan. This is consistent with the trend in re-location of combing, spinning and weaving capacities from Western Europe and Japan to China.

Of the 83 mkg of greasy wool equivalents exported overseas from South Australia in 1993-1994, 62% was exported in greasy form. Of the remaining 38%, approximately 13 mkg was carbonised, 5 mkg was scoured, 0.09 mkg was top, 1.3 mkg was noils and 1.2 mkg was waste. Note that it is difficult to reconcile these figures in percentage terms. For example, the weight of top will be drastically less than the quantity of greasy wool that it took to produce it.

The figures for top export also appear anomalous for other reasons, as the top output of G.H. Michell and Sons at Salisbury in South Australia greatly exceeds exports of top. A possible explanation might be top being initially sent to another destination within Australia and not being accredited as an export of South Australia.

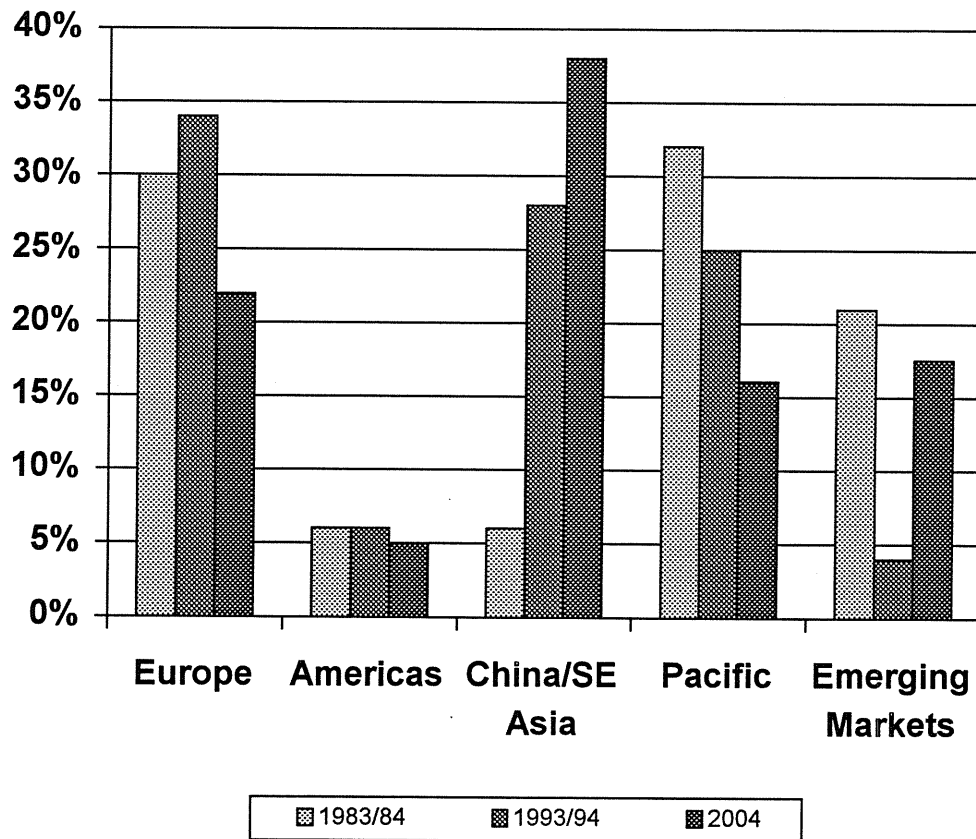
During the three year period from 1991-1992 to 1993-1994, for Australia as a whole, 12.5% of wool exports were scoured (about one-third of this wool was also carbonised) and 3.5% was exported as top or sliver (Source: Australian Bureau of Statistics). This is a little under double the amounts exported as semi-processed wools in 1985-1986, with a steady increase occurring in the intervening years (Source: ABARE Commodity Statistical Bulletin, 1993).

Import pattern

Australia does not import any significant amounts of apparel wool in greasy form. Australia still imports some carpet wools from New Zealand, India and Pakistan and the United Kingdom.

Imports will not be considered any further, as they are not regarded as particularly relevant to the South Australian wool industry now or in the foreseeable future.

Figure 13: Australia's wool exports



3.3 SPECIAL FEATURES OF THE INDUSTRY

Size of Flocks by Zone

Critical Issues:

- 27% of SA sheep in flocks of 5,000+
- 5,000+ flocks in Pastoral/High Rainfall Zones
- Over 70% of sheep in these zones are on properties with 2,000+ sheep

The distribution of size of sheep properties in South Australia is shown in table 2.

Approximately 41%, 39% and 19% of sheep in South Australia are in the cereal, high rainfall and pastoral zones, respectively.

For South Australia as a whole, 27% of the sheep are contained in the 5% of properties which have over 5,000 sheep. Furthermore 63% of the sheep in the state are run on the 26% of properties which have 2,000 sheep or more. Another way of putting that is that 37% of all

sheep in the state are grazed on the remaining properties (74%) which have less than 2,000 sheep.

The distribution of sizes of flocks varies in the different zones. The Pastoral area have the highest proportion of sheep (52%) on properties carrying over 5,000 sheep (12% of the properties), the High Rainfall Zone is intermediate and has 31% of the sheep on properties carrying over 5,000 sheep (8% of properties), whereas in the cereal zone, there are only 11% of the sheep in the zone on properties with more than 5,000 sheep (2% of the properties).

If one considers proportions of the sheep population in zones on properties with flocks of 2,000 sheep or more, the pastoral zone has 75% of its sheep on such properties (32% of properties), the high rainfall zone has 73% of its sheep on such properties (35% of properties) and the cereal zone has 47% of its sheep on such properties (19% of properties).

Clearly, the larger flocks are mostly in the pastoral and high rainfall areas, where they are likely to represent the main enterprise on those establishments. Flocks smaller than 2,000 sheep are spread across all the zones, particularly in the cereal zone, reflecting that sheep and wool production is likely to be very much a secondary enterprise in these cases.

National profile

The estimated 17,436 farms that comprised the sheep industry in 1992-93 carried almost 45 per cent of the total Australian sheep flock of 140 million (32 per cent of the total flock was carried on mixed livestock-crop farms and 19 per cent on sheep-beef farms). In 1992-93 around 50 per cent of farms in the sheep industry carried flocks of less than 3000 sheep and produced less than 13,200 kg (75 bales) of wool. Almost 70 per cent of total broadacre wool production in 1992-93 came from farms producing in excess of 13,200 kg (75 bales). (ABARE)

These figures strongly suggest that the South Australian profile and the Australian profile, in terms of distribution of flock sizes, are very similar.

Table 2: Distribution of size of wool producing properties in South Australia by zones

South Australia					Cereal Zone				High Rainfall				Pastoral			
Size of flock	Properties	%	No. sheep	%	Properties	%	No. sheep	%	Properties	%	No. sheep	%	Properties	%	No. sheep	%
Less than 500	1,712	19	426,100	3	824	17	222,450	3	710	23	153,750	2	178	15	49,900	2
500 to 999	2,187	24	1,640,250	10	1,353	29	1,014,750	15	554	18	415,500	7	280	24	210,000	7
1,000 to 1,999	2,771	31	3,968,750	25	1,648	35	2,337,000	35	781	25	1,135,250	18	342	29	496,500	16
2,000 to 5,000	1,901	21	5,801,500	36	820	17	2,406,000	36	846	27	2,670,000	42	235	20	725,500	23
Over 5,000	477	5	4,307,500	27	95	2	708,500	11	246	8	1,962,500	31	136	12	1,636,500	52
Total	9,048	100	16,144,100	100	4,740	100	6,688,700	100	3,137	100	6,337,000	100	1,171	100	3,118,400	100

Number of agricultural establishments without sheep = 5,029

Number of sheep and division between zones is approximate

SOURCE: Aust. Bureau of Statistics at 31st March 1993

The production of wool by the various zones in South Australia is approximately proportional to the number of sheep in each zone

Legislation/regulation

Primary Industries, South Australia currently administers nine Acts of Parliament that deal with livestock diseases or identification. Cattle and sheep owners are directly affected by five of these Acts, they being the Brands Act (1933), Cattle Compensation Act (1939), Foot and Mouth Disease Eradication Fund Act (1958), Stock Act (1990) and the Stock Foods Act (1941). There is the intention of amalgamating these Acts into one Livestock Act.

Industry self funding

Mechanisms for the collection of stamp duty or a registration fee currently exist for the apiaries, pig, cattle and deer industries. These industry funds were originally established to provide compensation for livestock that died from, or were destroyed because they had, particular diseases. Today these funds are being used increasingly to support programs carried out for the particular industry.

Representatives from a number of industries consulted to date have indicated that they want to have access to a funding mechanism. The Livestock Act will contain an ability for an industry to raise funds for activities specific to that industry. Note that this does not imply that self-funding is compulsory; rather it provides an established framework for when an industry sector perceives that they will benefit from doing so. It is envisaged that the funds be clearly identified as being sourced from and belonging to a specific livestock group, controlled by representatives from that sector and managed under a trust type system.

Vendor liability legislation

A national agreement to introduce vendor liability legislation has been made. The main effect of this is that when an item is traded, the onus falls on the vendor to prove that the item meets specification. Under current trade practices legislation the onus stays with the purchaser to prove the item does not meet specification.

A decision has to be made to determine what form the vendor legislation will take for the South Australian livestock industries.

Codes of Practice

A facility whereby industry codes of practice are legitimised is to exist within the new Livestock Act. These will differ between industries, but would tend to set minimal acceptable standards for that industry. For example it could be used to specify the disease status of embryo recipients. The advantage of a code of practice is that it can be more readily changed than an Act or Regulations. It is planned that the code would be written and controlled by participants in the relevant industry.

3.4 DEPARTMENTAL INPUTS/PROGRAMS, PROJECTS

Operational Programs Related to the Wool Industry

The following is a list of Wool Operational Programs currently conducted in Primary Industries (SA) and the South Australian Research and Development Institute. These programs have research, advisory and regulatory components.

Major Programs Currently Conducted

1. Soil fertility, soil structure, plant nutrition and water use.
2. Breeding and selection of pasture plants.
3. Management and utilisation of pastures and rangelands vegetation.
4. Genetic improvement of sheep.
5. Nutrition of sheep.
6. Reproductive efficiency of sheep.
7. Sheep pests, health and welfare.
8. Provision of policy advice on the sheep and wool industry.
9. Marketing and processing of sheep, wool, skins and other by-products.
10. Wool harvesting and handling systems.
11. Communication and training.
12. Wool quality.
13. Sheep management.

Resources

Research

Staff and resources involved in research servicing the sheep and wool industry are approximately:

State Full Time equivalents (FTE's)	23.0
Industry Trust Funded FTEs	10.7

Total 33.7

Extension and Regulatory.

An estimated 15.5 FTE's provide extension and regulation related to the wool industry.

So far, resources from the Sustainable Resources group have not been included in the FTE count. When the input to the Wool Industry Program from Sustainable Resources has been clarified, they will be included.

Thus, a total of 49.2 FTE's are devoted to wool industry activities by PISA/SARDI in South Australia.

4 WOOL INDUSTRY ECONOMICS AND MARKETING

4.1 WOOL ECONOMICS

Wool Demand

Wool demand is driven principally by events overseas, since around 98 per cent of Australian wool is exported. Around two-thirds of Australian shorn wool exports are exported in raw form and the remaining one-third in semi-processed form. Major determinants of overseas demand are economic growth and the price of wool relative to competing fibres.

Wool prices to weaken

Wool prices in 1995-96 are expected to fall in response to lower wool demand. The eastern market indicator is forecast by ABARE to average 750c/kg in 1995-96, after averaging 788c/kg last season.

Despite the 5 per cent decline in wool production forecast for this season, the availability of wool is expected to remain flat in 1995-96. This is because of increased stock sales by Wool International and unsold stocks built up in brokers stores last season.

Demand eases

Early season demand for wool has been subdued. The downside risk associated with the policing of import duty evasion in China has eventuated, with China purchasing less wool at the end of last season and early this season. The reduced presence of Chinese buyers at auction was largely responsible for the 115c/kg fall in the eastern market indicator between mid-May and early September.

China is not expected to fully re-enter the market until late this year. By that time it is expected that China's access to cheaper and lower quality wool from the former Soviet Union will have declined. Notably, the supply of wool from the former Soviet Union is expected to be lower than last season mainly because there are reduced stocks available for sale this season.

As well, Chinese wool processors are likely to have begun running down the 60 000 tonnes of wool stocks estimated to be sitting on the docks and in mills requiring payment of back duties before release.

Despite this, the present import problems in China and restrictions on the access of mills to finance for raw wool purchasing in the first half of 1995-96 are expected to result in reduced Chinese demand for Australian wool this season.

In Europe and North America, additional wool is likely to be required to meet the increased demand for apparel particularly if weather conditions in autumn and winter return to normal. Demand for wool apparel in Western Europe and North America in 1995-96 is likely to be strengthened by economic growth, and an expected fashion shift back to wool.

In Japan, apparel demand is forecast to improve only marginally in 1995-96 in line with weak economic growth. It is expected that growth in import demand in Japan for woollen textiles and apparel will be dampened in 1995-96, if the yen depreciates as assumed.

However, there is considerable uncertainty concerning the Japanese market. The most immediate threat is a possible fall in consumer spending if unemployment continues to rise as industry cuts costs.

Overall, there are two major risks to ABARE's forecasts. First, the timing of the resolution of the dispute in China over the payment of outstanding import duties on wool already purchased will be critical to increased buying of wool by that country. Second, the International Wool Secretariat recently reported that the textile pipelines in Western Europe, Japan and the United States are well stocked, so any weakening in demand at the retail end could be reflected in lower raw wool prices.

In 1994-95, Australian exports of wool were 834 000 tonnes, 9 per cent lower than in 1993-94. Although wool availability is expected to be similar to that for last year, exports for 1995-96 are forecast to be slightly lower at 816 000 tonnes.

Shorn wool production to bottom out in 1995-96

The Australian Wool Production Forecasting Committee has forecast shorn wool production to fall by a further 35 000 tonnes to 640 000 tonnes this season. This fall largely reflects the significant decline in sheep numbers during 1994-95, largely as a result of the drought.

Sheep numbers at the close of 1994-95 were 120 million, 10 per cent fewer than in 1993-94 and the lowest since 1953-54. This decline is expected to significantly reduce the number of sheep shorn in 1995-96 and, with wool cut per head expected to remain flat, lead to a 5 per cent fall in shorn wool production.

Improved wool prices in early 1995 and the widespread improvement in climatic conditions in southern Australia over the past few months have resulted in farmers starting to rebuild their flocks. This initial rebuilding is expected to be slow because many farmers in mixed enterprises have sought to improve their farm incomes in the short term by planting winter crops. Moreover, it is likely that some Australian farmers did not join their ewes for spring lambing because the breeding flock was in a poor state following the extended dry period and the lateness of the autumn break.

The Australian Wool Testing Authority recently released statistics on the 1994-95 clip. Analysis reveals that the clip contained a higher volume of fine wool because of the drought. The volume of bales tested in the 20.5 micron and finer range increased from 21 per cent in 1993-94 to 28 per cent in 1994-95.

Further, staple length declined significantly - the percentage of bales tested with an average staple length greater than 100 mm declined from 20 per cent in 1993-94 to 12 per cent in 1994-95. However, it appears that the drought only slightly reduced average staple strength in 1994-95.

World wool supply to fall

World wool production fell by around 7 per cent to 1.5 million tonnes (clean) in 1994-95 and carry-in stocks were lower. It is expected that world wool supply will remain low in 1995-96, given the low initial world stocks and reduced production in the main exporting countries.

4.2 RETURNS TO WOOL PRODUCERS

Australia

Typical returns are shown in ABARE's survey on Physical and financial performance of broadacre farms, Australia by industry, 1988-89 to 1993-94 (Farms running sheep)

Before discussing this information specifically, it is important to realise that the period covered by the survey encompasses a time of extraordinary hardships for the wool industry in Australia, perhaps the low point being the suspension and ultimately the cessation of the Reserve Price Scheme in the first half of 1991. This event, and those that led up to it, have clearly had an adverse affect on woolgrower returns from 1991 to 1994, covering three of the years surveyed.

Main points arising from the survey are:

- Farm business profit dropped from \$27,089 in 1988-89 to a low of -\$38,926 in 1991-92. It remained negative in 1992-93 (-\$32,427) and in 1993-94 (-\$21,441), the latest information available;
- Many sheep producers responded to lower incomes by, among other actions, reducing expenditure on fertiliser, which reduced from a high of \$7,318 in 1988-89 to a low of \$3,162 in 1992-93. Repairs and maintenance expenditure was also pruned back over this period;
- Total farm debt increased from \$85,696 in 1988-89 to a high of \$130,965 in 1992-93 and only marginally reduced to \$128,678 in 1993-94, and
- Wool production changed little within the surveyed group, as did the area cropped. Beef cattle numbers did not change much either.

In conclusion, profitability for the typical sheep producer surveyed has fallen away since 1988-89 to negative figures since 1990-91. Higher wool prices evident during late 1994 and early 1995, drought notwithstanding, increased returns to some sheep producers who sold wool during that period.

South Australia

Typical returns for sheep producers in South Australia are presented in ABARE's survey on "Physical and financial performance of broadacre farms, South Australia by industry, 1988-89 to 1993-94 (Farms running sheep)"

There is little difference in the trend in financial performance between SA sheep producers and sheep producers in Australia as a whole. The only slight difference is that they appeared to greatly increase their cropping area in 1989-90 and 1990-91, presumably to try to compensate for reduced wool incomes. Like Australia as a whole, SA sheep producers surveyed did not make large changes to the quantity of wool grown, and only marginally increased cattle numbers.

Returns for the top & bottom 20% of sheep producers in Australia

Returns for the top and bottom 20% of sheep producers in Australia are presented in ABARE's survey.

The main points arising are:

- there are very large differences in farm cash incomes and business profits between the top 20% and bottom 20% of sheep producers surveyed. The top 20% of producers also perform much better when compared to typical producers;
- the top 20% of sheep producers run more sheep, grow more wool and maintain higher cash incomes than the typical producers surveyed. They also carry higher absolute levels of debt;
- cash farm incomes and farm business profits declined for the top 20% of sheep producers from highs of \$136,325 and \$123,420, respectively in 1988-89 to lows of \$39,120 and - \$8,162, respectively in 1991-92, and
- although the top 20% of sheep producers did cut back on fertiliser expenditure and repairs and maintenance expenditure from 1988-89 to 1992-93, it was less than the relative cut made by typical sheep producers.

4.3 COMPETITIVENESS OF THE WOOL ENTERPRISE

Farm Gate

In relation to other grazing enterprises, be they other species or elsewhere in Australia, farms running sheep for wool in South Australia are competitive, based on an examination of typical gross margins. Grazing enterprises generally in Australia are characterised by relatively low rates of return on capital. Judgements on competitiveness of wool enterprises at the farm gate need to be made in the context that the period 1991 to 1994 have been very difficult years for wool, as described elsewhere.

When compared to other woolgrowing enterprises in the other major wool-producing nations (see Figure 7), Australia is in a very dominant situation, producing 30% of the wool in the world. From information gathered by the International Wool Secretariat and experiences of countries like Russia in recent years, Australia, if anything, is likely to become even more dominant in world wool production. For example, in Russia, the growing of wool is far less profitable than growing sheep for meat, which, in turn, is far less profitable than growing crops.

International Market Place

The wool enterprise in South Australia and Australia as a whole is highly competitive in the international market place, with Australia responsible for 60% wool exported by the major wool producing countries each year. Australian wool has been well-recognised for being high-quality.

Notwithstanding, it would be a mistake not to recognise that Australia's (and South Australia's) competitive position could slip if the industry does not seriously tackle, and reduce, contamination in wool. Also looming on the horizon are stricter controls for pesticide residues, especially for wool scouring effluent.

National/state marketing arrangements

Around 80% of Australian wool (including South Australian wool) is currently sold at a series of public auctions, held throughout the year. As of June, 1995, there are 8 selling centres, including Adelaide. However, a number of these centres, including Adelaide, are currently threatened with closure, in an attempt by the national wool industry to move towards centralised selling in only 3 locations, Sydney, Melbourne and Fremantle.

Private buying activity is quite common, with some woolgrowers selling whole clips privately and many woolgrowers privately selling odd small lots of wool. The Sydney Futures Exchange currently operates two instruments for trading in wool futures, neither of which is well patronised.

As described earlier, until 1991 a Reserve Price Scheme existed for wool, which came into being in the early 1970s. Since its inception, the RPS has been controversial.

The RPS started out with the limited aim of providing a buffer against short-term downward movements in price, but ended up attempting to obtain a maximum sustainable price for woolgrowers (see Annual Reports of the Australian Wool Corporation, from 1973 to 1990). Built into the scheme was a schedule of reserve prices with a pre-determined relativity between different qualities of wool.

There were a number of important consequences of the Reserve Price Scheme:

- the reserve price relativities partially disguised trends emerging for varying quality wools e.g. premiums for wools finer than 22 microns from the early 1980s until the wool boom period, starting in 1986-87;
- it discouraged firms investing in their own stockpiles of wool, at various points of the processing chain;
- it encouraged a centralised approach to quality and clip preparation standards. This resulted in a laissez-faire attitude by some woolgrowers to wool quality issues, and
- it encouraged a build-up in sheep numbers and wool production, especially during the late 1980s. This also spilled over into higher land prices.

Stockpiled wool is now being sold on a fixed quantity schedule through to 1997. It is anticipated that in 1997, the amount of wool remaining in the stockpile will not then be large enough to have a significant impact on the market.

Since the cessation of the RPS, at times very large premiums have emerged for wools finer than 22 microns, although such premiums have been highly volatile. It is difficult to know, with the dominance of 22 to 24 micron wools in the stockpile, what size these premiums might be in a market unencumbered by the stockpile.

Market signals are certainly less distorted post RPS than before. However, many woolgrowers find it difficult to interpret market signals. There are many attributes of wool which help determine the price of wool, although mean fibre diameter is clearly dominant. As an example, some growers can be confused when "tender" wool, of low tensile strength, attracts a higher price than wool of higher tensile strength from the same clip. The fact that the tender wool is most likely also finer in fibre diameter tends to be overlooked.

Relative ease of entry for new producers

If a person does not already own or lease a property carrying other enterprises, the amount of start-up capital required to become a commercial wool producer, with a flock large enough to provide a living, is substantial. To provide a living, a person should be aiming to run at least 4,000 dry sheep equivalents (dse) and preferably 5,000 if the aim is to have wool as the major source of income. Improved land prices currently range between \$110 to \$150 a dse in South Australia. Hence 4,000 dse requires an investment of \$440,000 to \$600,000 in land and improvements alone, plus another \$50,000 to \$80,000 in stock.

It is thus likely that new entrants to the wool industry of South Australia are more likely to be people with land currently being put to other uses, such as running beef cattle, a sheep enterprise mainly aimed at meat production, or cropping. In these cases, the major factors determining the ease of entry into the industry are the relative price of wool sheep compared to existing livestock (changeover values) and the cost of any capital improvements required, such as shearing sheds and yard facilities, fencing and pasture establishment and renovation. These can vary significantly over time and from case to case.

Of all the alternative enterprises, the ability of sheep meat producers to mate their ewes back to Merino sheep rather than terminal sire breeds means that they have the greatest potential to "enter" the apparel wool industry. Since 90% of sheep in South Australia are Merinos, there seems limited scope for sheep meat producers to greatly influence the wool clip of the state, especially that classified as apparel wool.

Producers in the sheep-cereal zone of the state have traditionally had more ability to significantly increase and decrease wool production, but few of these changes are caused by "new entrants" into the wool industry. Rather, changes largely come from existing wool producers with cropping enterprises.

In the long term, drastic alterations in the supply of wool in South Australia and Australia from new entrants into the industry are unlikely.

4.4 SUMMARY OF IWS FORECASTS FOR THE WOOL INDUSTRY TO 2004

Wool demand. This is increasing in developed markets as economic growth stabilises. Economic growth in China and India is expected to be between 5-7% from 1995 to 1999, but higher wool prices will limit growth in consumption.

Number of farms. These will continue to fall in Australia from 70,000 currently to 63,000 in 2004, with the average size increasing.

Australian wool traders. During the next 10 years:

- the distinction between brokers, private treaty merchants and exporters will blur,
- the number of Australian wool traders will fall,
- some international wool processors will purchase wool directly from Australia,
- sale by description will be more common and visual inspection will be less common,
- wool will be increasingly differentiated by quality systems and standards.

Australian shorn wool production. Production is forecast to rise after 1995/96 in response to earlier high prices and a return to normal seasonal conditions.

Australian wool prices. In 1994/95 wool prices were near the long term trend as economies recover. Subsequently, the forecast suggests:

- In 1998/99 wool prices will be just below trend prices (stockpile still being sold and relatively high trade clearances),
- 1999/2000 and beyond there will be lower wool availability and higher prices.

World Wool Production. World wool production in 2004 returns to current level of 2,800 mkg greasy. This is mainly because Australian production returns to 950 mkg. Chinese production will be at a similar level to now. The Commonwealth of Independent States (formerly Russia/U.S.S.R.) will produce less, as wool production under their conditions proves uneconomic in a market economy. Other countries will increase wool production by 50 mkg compared to 1994.

Total traded wool availability. This is set to rise. China and the CIS traded less than 10% of production previously, but now more than 30% of China/CIS wool production is traded onto the world market or is processed and consumed within the market economy. Also, apparel wools' share of total world wool production is rising at about 0.5% per annum.

Australia's wool exports. Over the forecast period to 2004, both the share and volume sent to Western Europe, Japan, Taiwan and Korea is to decline. In contrast, both share and volume sent to China, SE Asia and Emerging Markets of India, Central Europe and the CIS is set to increase.

Combing Capacity. Forecast to 2004, growth in combing capacity in Australia will offset most of the decline in Europe and Japan. The growth in Chinese capacity around 1994 was mostly for domestic use, with expansion peaking during 1994. Although China's capacity is set to decline over the next 10 years, there is a lot of under-utilised capacity, so production may not fall.

The increase in Australian combing capacity is mostly from investment from existing combers. All wool combers in Australia may not be viable in the long term. Mergers with European, Japanese and Australian combing sectors will increase the concentration within the industry.

Spinning Capacity. A similar, but faster, trend than with combing capacity away from Western Europe and the Pacific region towards China, SE Asia and the emerging markets is expected. This is because spinning is more labour intensive; proximity to markets is more important than proximity to raw material sources. Government incentives to retain textile firms may be influential.

Weaving Capacity. This is moving more slowly to China and other emerging markets. The type of weaving capacity experiencing the greatest move between countries is in bulk products or standard lines.

Consumer trends to 2004. These are:

- A move towards more casual clothing occurring in wools' developed markets (fastest in US, slowest in Japan);
- Demand for high quality tailored wool clothing is growing in major developing markets i.e. China and India;
- Clothing life cycle is shortening for young consumers, and
- Fashion wardrobes are becoming more fragmented and diverse and will include a broader range of styles.

Forecast changes in trade barriers. Trade barriers are likely to be lower within 10 years, with further declines after 2004.

Other critical issues. These include:

- *Risk*
 - The political situation in China and the CIS;
 - A recession in the world is likely before 2004, but the timing is uncertain;
 - Fashion movements;
- *Geographic*
 - Western Europe is a leader in innovation, fashion and design;
 - US leads in youth, casual market;
- *Value chain*
 - a greater % of the benefits of cost reductions at the early stages of the value chain flow back to growers in IWS countries than those at later stages
 - big garment makers are keen to capture the retail margin, therefore increasing movement to retailing own product

5 ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Analysis by Industry Representatives

A series of meetings of the Sheep and Wool Advisory Group (SWAG) industry planning group were held during late 1994 and early 1995 to undertake and refine an analysis of the Strengths, Weaknesses, Opportunities and Threats (SWOT) for the SA wool industry. Participants also indicated what they thought the roles of PI SA and SARDI should be.

Before members dealt with the SWOT analysis a consensus overview was discussed, which is presented below.

These documents now have the status of SWAG position papers.

A combined meeting of the SWAG Planning Group and PISA and SARDI staff in the Wool Industry Planning Group was conducted in May, 1995. The Opportunities and Roles statements put together by SWAG were put to the test and were approved.

The outcome of the SWAG analysis is shown in table 3, and the roles for PISA and SARDI are shown in table 4. An expanded version of the opportunities listed in table 3 can be found immediately below.

Analysis by PI(SA) & SARDI Wool Industry Planning Group, December 1993.

The strengths, weaknesses, opportunities and threats (SWOT) of the South Australian wool industry were identified to highlight the major factors affecting the industry's economic competitiveness and sustainability. This analysis involved input from research, extension and animal health regulatory staff in PI(SA) and SARDI who currently provide services for the wool industry in this state. In addition, industry opportunities and problems identified in recent publications of the Australian Wool Research and Promotion Organisation (now the International Wool Secretariat - IWS) and the Meat Research Corporation have been incorporated into the final draft of this analysis.

The results of this internal groups' analysis is shown in table 5. It is grouped into On-Farm Factors, Off-Farm Factors, Related Industry Factors, Industry Structure and Risk Management Factors.

SWOT analyses

Both the SWOT analysis conducted with industry representatives (SWAG industry planning group) and the SWOT analysis conducted by the PISA & SARDI Wool Industry Planning Group have been used to identify a number of major opportunities to enhance the wool industry's contribution to South Australia's economy over the next five years and beyond.

The major factors which have been investigated so far by PISA and SARDI are discussed further in Section 5, Industry Development, and in Section 6, Opportunities and Roles Analysis of this document.

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Table 3: SWOT analysis of the South Australian wool industry by SWAG

STRENGTHS		WEAKNESSES		OPPORTUNITIES		THREATS	
1	Well defined predominant wool type.	1	Lack of market competition for some wool types. <i>Wool has not positioned itself well in the growing leisure/sportswear market.</i>	I	Improvement of wool quality	1	Continued poor management
2	Early maturing animals, fertile.			a	Reduce micron. (connected with b)	2	Lack of market focus
3	Preparedness to accept change and innovation in marketing (e.g. sale by sample, additional measurements)	2	Inability to accept "best practice" by many producers.	b	Improve management of: <ul style="list-style-type: none"> – micron, cv of micron & coarse edge – tensile strength – VM fault – style and other 	3	Lack of information because of poor forecasting
4	Healthy environment -lack of internal parasites -warmth -lack of footrot expression	3	Unsustainable pasture production in some areas <ul style="list-style-type: none"> – salt and rising water – arid rangelands – stubble residues – rundown pastures 	c	Substantial reduction in contamination	4	Market disruption from poor production information
5	Parochial - pulling together · preserving genetic types · strongly focused on a common centre and unified	4	Lack of genetic improvement and very little formal comparisons done of bloodlines.	d	Improve wool harvesting techniques <ul style="list-style-type: none"> – shearing – preparation and transport 	5	Perception/presence of contaminated product
6	Stable network of brokers and marketeers	5	Management weaknesses <ul style="list-style-type: none"> – failure to grasp market fundamentals – inability of people to capture production and quality potential of farms and products (perception problem). — lack of comprehension of scope for genetic improvement 	II	Information Management	6	Declining production from medium to longer term enterprise changes
7	Relatively drought proof	6	Lack of detection/knowledge of footrot.	a	Better use of industry information	7	Reduced government funding
8	High mobility of sheep between zones and complementarity of zones	7	Parochialism.	b	Improve forecasting to assist market targeting and development	8	Reduced industry funding
9	Research & Development capacity (especially Turretfield).	8	Inability to forecast production.	III	Improvement of Industry Skill Levels	9	Ageing of workforce
		9	Information management.	a	Improve all industry skills. (linked with b)	10	Declining interest in sheep farming
				b	Create a Reg French type model (Best Practice Model)	11	Drench Resistance
				IV	Improvement of Productivity	12	Reducing position of wool in world textiles
				a	Improve productivity of all resources devoted to wool production & increase size of SA clip		
				b	Improve sheep health		
				c	Minimise economic impact of lice and footrot		
				d	Cut more wool per head		
				e	Major control of predators (foxes/dingos)		
				V	Develop New Knowledge		
				a	Meaningful production research, driven by the needs of industry and the market		
				VI	Integration		
				a	Scope to develop and improve meat returns		
				b	Role of SA Merino as prime lamb mother		
				c	Develop improved sheep skins and sheep leather returns		

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Opportunities for the Wool Industry in SA: - Identified by SWAG (11/4/95)

I Managing to improve wool quality

- a Reduce micron of SA wool clip.
- b Improve management of
 - micron, cv of micron & coarse edge
 - tensile strength
 - VM fault
 - style and other
- c Substantial reduction in contamination.
- d Improve wool harvesting techniques.
 - shearing
 - preparation and transport

II Managing Information

- a Better interpretation and use of industry information.
- b Improve production and market information to assist market targeting and development, based on ongoing assessments of customer needs

III Improving Industry Skill Levels

- a Improve targeted industry skills (e.g. clip quality management, animal health, sheep selection and breeding)
- b Developing and managing sustainable feedbase in all zones (sustainable pasture skills).

IV Managing to Improve Productivity

- a Improve productivity of all resources devoted to wool production.
 - wool production systems
 - wool harvesting
 - wool marketing
- b Manage sheep health to optimise profits and minimise risk
- c Minimise economic impact of internal parasites, lice and footrot.

V Develop New Knowledge

- a Market-driven production and processing research.

VI Integration

- a Scope to develop and improve meat returns.
- b Develop improved sheep skins and sheep leather returns.
- c Develop efficient multi-product farming systems based on sheep production.

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Overview of Current Wool Industry in SA – SWAG Position Paper (8/4/95)

State Production and Value

Over the past decade, South Australia's annual greasy wool production has ranged from 100 to 136 million kg, with a gross value ranging from \$260 million to \$612 million. Gross value per annum averaged \$410 million for the 10 years ending in June 1994. Off-farm added value for the SA wool industry is \$124 million per annum (includes \$90 million per annum from the scouring, carbonising and top-making operations of G.H. Michell and Sons Pty Ltd). The forecast wool production in SA for 1994/95 is down to 98 million kg. Co-products of the wool industry include mutton, sheep skins, live sheep and breeding ewes for prime lamb enterprises.

The SA wool industry is spread across 3 production zones. The zones (and the percentage of the sheep in the state they contain) are: high rainfall (39.3%), cereal sheep (41.4%) and pastoral (19.3%). The average total number of sheep in South Australia is 16.9 million, with a range from 14.7 to 18.4 million over the last decade. Wool production varies according to market perception and seasonal conditions; however, sheep numbers and production of wool in SA has been stable relative to other states within Australia.

For South Australia as a whole, around 1% of sheep farms produce 9-12% of the wool and run a minimum of 10,000 sheep or more. Around 5% of all sheep farms in the state produce 27% of the wool and run a minimum of 5,000 sheep or more. Furthermore, around 26% of all sheep farms in the state produce 70% of the wool and run a minimum of 2,000 sheep or more. In the Pastoral Zone, there are a relatively higher proportion of larger flocks, with 5% of the sheep flocks running 10,000 sheep or more, accounting for 36% of the sheep. There are also 12% of the flocks running 5,000 sheep or more, accounting for 52% of sheep in the Pastoral Zone. In the High Rainfall Zone, 1% of the flocks run 10,000 sheep or more and account for 9% of the sheep, furthermore 8% of the flocks run 5,000 sheep or more and account for 31% of the sheep in the zone. In the Cereal Sheep Zone, 0.3% of the flocks run 10,000 sheep or more and account for 3% of the sheep, with 2% of the flocks run 5,000 sheep or more and account for 11% of the sheep in the zone.

The SA wool clip is approximately 1.2 microns stronger on average than the Australian wool clip as a whole, mainly due to the genetically stronger strains and bloodlines of sheep run in the state. In the past, higher wool cuts and meat values per head of SA sheep, have often compensated for the lower unit wool prices associated with stronger wool, but at the level of price premiums reigning for wools of finer fibre diameter since 1991, the SA wool clip has become lower in value compared to other Australian States. This reduces sector profitability unless compensated for by increased productivity and better exploitation of the SA Merinos advantages in fertility and meat production.

Industry Arrangements and Planning

- research, development, promotion and marketing are institutionalised and are partly regulated, and

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

-
- there has been a failure to adopt better forecasting techniques - production information and forecasts need to be more accurate and reliable to better meet customer needs.

Woolgrower Finances, Returns and Skills

- wool suffers from long term and continuing decline in terms of trade;
- there is a perceived lack of working finances and lack of capital. Lack of capital and low returns leads to industry is dependant on re-investment in infrastructure, new technologies and new skills, and
- need for higher skill levels in all sectors. This may require refresher skills training, with recognition of prior learning.

Marketing

- lack of understanding of market fundamentals by many woolgrowers, however there is a growing number seeking market information. Some are using it for a range of innovative marketing arrangements;
- the customer needs are unclear, due to the large number of steps between the raw wool and the final product, which causes some fragmentation of the market;
- there is a lack of market signals for some customer needs (e.g. type of woolpacks, quality assurance, coefficient of variation of FD and reliability of supply), and
- shortage of highly-readable and concise interpretation of information available e.g. wool statistics, market analysis, production analysis.

Productivity On-Farm

- 3 production zones;
- Pastoral - some areas are overstocked & many properties are well below best practice on size i.e. 10,000 sheep or more;
- High Rainfall – needs more productive sustainable pastures;
- Cereal Sheep – needs legume pastures and better drought strategies;
- Between 1977 and 1989, productivity gains were 1-2% per annum wool, compared to 5% per annum for grains (ABARE Discussion Paper 90/06, September 1990);
- there is much scope for improvement in productivity and quality of wool production (involving greater use of modern business, land management and pasture management technologies). Best practice systems, such as 10,000 sheep or more in pastoral zone, pre-shearing crutching, 100% weaning, 1-2% genetic progress p.a. should be targeted;
- some genetic features of SA sheep are good (size, constitution, fertility, wool cut) but generally this does not make up for lower wool values relative to finer wools;
- lack of perception by woolgrowers of capacity to make genetic improvement;
- under-utilisation of dry matter in high rainfall zone, and
- encouraging changes are being made by leading-edge producers, believed to include many of the larger flocks, but otherwise little is known of production and quality profiles.

Quality Management

- quality management not seen as self-controlled. Limited market signals for quality;

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

-
- contaminants on and off-farm, the environmental impacts, particularly the ones off-site (e.g. processing effluent and pesticide residues) are a growing concern;
 - contamination problems, especially for customers, and
 - industry should be aiming for continuous improvement.
-
- lice in wool is a problem, reducing wool value and increasing processing costs. Many woolgrowers are not responding to market signals. Around 30% of SA flocks may be lice infected (no recent survey data, but NSW is around 35% prevalence)

Health of Sheep

- generally seen as good
- HR zone - intestinal worms (threat of drench resistance)
 - footrot. Survey results in SE showed 4% of properties had clinically virulent footrot, with 35% having clinically benign footrot.
- poor nutrition and pregnancy toxemia prevalent in autumn lambing situations

Sustainability issues

- pesticide residues in wool is an emerging quality issue
- land degradation is endemic in all zones, e.g.
 - Pastoral Zone - stocking rates too high, loss of soil and cover, loss of perennials, soil erosion
 - High Rainfall Zone - rising water tables, salinity, acidity
 - Cereal Sheep Zone - soil erosion, soil structure decline, drought management
- offsite effects
 - water flows into streams and coastal zone
 - water flows, dust and odour from feedlots
 - effluent from processing

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Table 4: Roles for PISA & SARDI in the South Australian wool industry: Identified by SWAG (11/4/95).

ROLES	COMMENTS
POLICY/INDUSTRY SUPPORT <ul style="list-style-type: none">· Foster sustainable economic development of wool industry in SA.· Support industry planning and ongoing identification of opportunities at regional level· Support and promote national priorities (ecologically sustainable development etc.)· Facilitating disaster recovery - fire, disease, drought, flood etc.· Ensure essential wool industry services are available by facilitation or short-term delivery	
TECHNOLOGY/PRODUCTION SUPPORT <ul style="list-style-type: none">· Facilitate the targeted adoption of superior technology & management systems (leading edge information to support innovation)· Independent collection, analysis, interpretation and provision of information· Facilitate the development and evaluation of Research & Development outcomes offering promise to SA· Conduct Research & Development.· Develop industry knowledge and skills base	
REGULATORY SUPPORT	

Table 5: SWOT Analysis of the South Australian Wool Industry (Internal Gp)

FACTORS	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
ON FARM FACTORS (Quality, productivity, management, maintenance, new products, environmental, sustainability)	<ul style="list-style-type: none"> Efficient farm production systems. Ability to produce quality products with clean green image. Lamb production complements other farming enterprises such as cropping, wool and beef. Low level of industry regulation. Best wool producers in the world. Easy care SA sheep Assists with weed control in cropping systems 	<ul style="list-style-type: none"> Low adoption of new technology exacerbated by increased average age of farmers who have had comparatively less educational opportunities. Reduced incomes, limited opportunities for investment, deterioration of existing facilities and barriers to adjustment measures. Limited alternative technology for herbicides and pesticides. Factors causing infertility and low lambing percentages including winter lamb mortalities, low ewe mating weights in autumn. Limited means of comparing ram sources. Less than optimum pasture quality and quantity, <ul style="list-style-type: none"> grass dominance in pastures. low legume seed bank. lack of persistent varieties in cereal areas. poor performance of some High rainfall species outside their immediate adoptive range. slow pasture establishment in late autumn/winter. low quality stubbles in autumn. feed base doesn't match feed requirements. low stocking rates. Impact of subclinical diseases poorly recognised. Insufficient emphasis on product differentiation. Lack of adoption of alternative feed management methods required to protect resources in times of drought Lack of genetic parameters for wool quality traits in SA Poor understanding of economic parameters associated with pasture and crop production Illthrift in weaners Low staple strength, high VM in some wools High FD in SA wools 	<ul style="list-style-type: none"> Improve farmer education to increase use of technology and raise efficiency Develop total quality management systems with producers, agents and processors Develop new marketing systems with farmers, use electronic selling systems, product specification Produce and promote residue free products Change to later lambing to improve feed utilisation Increase reproductive rates Improve disease control and increase productivity Improve pasture quality and quantity to increase stocking rates <ul style="list-style-type: none"> improve pasture establishment techniques control weeds, pests, feral animals redefine fertiliser needs and costs improve grazing management techniques develop/improve rangeland cultivars Improve wool quality - genetics <ul style="list-style-type: none"> - management Improve wool harvesting Change shearing time to spread workload of shearers (and improve wool quality) Improve wool description 	<ul style="list-style-type: none"> Reduced disease surveillance and control affecting profitable production; ovine brucellosis, internal parasites, ARGIT, clostridial diseases, pinkeye, CLA, scabby mouth, mineral deficiencies, plant poisoning. Possible animal welfare issues. Environmental considerations - soil erosion, salinity. Chemical residues. Pasture insect damage, locusts, mice plagues, rabbits, noxious weeds. Wet winters & waterlogging in SE and KI. Droughts, late seasonal breaks, summer rainfall. Reduced extension and research activities. Dingoes

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

ANALYSIS OF INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Table 5 (Continued): SWOT analysis of the South Australian wool industry (Internal Gp)

FACTORS	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
OFF FARM FACTORS (Production base, world trade, quality, education, government policies).	<ul style="list-style-type: none"> Available education facilities. Agricultural Bureaus. Existence of scientific/technical agencies. Industry structure and organisation facilitates information transfer, levy collections etc. 	<ul style="list-style-type: none"> Diminishing political importance and strength of primary industries sector. S.A.'s high dependence on export markets. Climate as it affects wool quality Lack of range of chemicals because of small domestic demand 	<ul style="list-style-type: none"> Development of new products/blends. Fashion trends Other uses for wool Micro-economic reform GATT Targeted RFDD lending to high value opportunities. Increase industry concentration in SA e.g. more wool processing 	<ul style="list-style-type: none"> Residues in processing. Restrictive funding policies of banks. Landcare/conservation pressures may limit production. Macro-economic issues and influence. Interstate subsidies affecting competitiveness. Sustainability of production base Domestic & work environment requires less clothing than before
RELATED INDUSTRIES FACTORS (Input supplies, finance, storage, transport, processing, agribusiness).	Strong network of agents and resellers.	<ul style="list-style-type: none"> Most wool exported through eastern states Non-targeted genetic stock High wool transport costs Joint product/reduced specialisation problem. lack of innovation and entrepreneurialism in the industry. conservative lending policies of financial institutions. 	<ul style="list-style-type: none"> More domestic value adding. Joint ventures with processors. Better product description Differentiate Australian wool in the market place 	<ul style="list-style-type: none"> Influence of overseas investors in local processing operations. High input costs - transport, labour, chemicals, processing. Lack of specialist consultants. Alternative products
INDUSTRY STRUCTURE (Organisation, structure, education needs)	<ul style="list-style-type: none"> Efficient, structured industry organisations (AWRAP/IWS). Merger of IWS/AWRAP Existence of technical agencies (AWTA Ltd). Government regulation acceptable and attractive for some overseas clients. Low level of government assistance 	<ul style="list-style-type: none"> Large numbers of small producers. Wool production often a sideline operation. Conservative operations of some agents. Fixed research levy causes instability of research funding. Limited State funds to address regional issues not covered by funding bodies. Long wool pipeline Concentrated stud industry 	<ul style="list-style-type: none"> Increased role for agribusiness and technical agencies in technology transfer, extension and research. Arid Zone Research Centre Stud Industry concentration 	<ul style="list-style-type: none"> Reduced Government funding for extension and research. Welfare implications affecting wool production. Sustainability in Pastoral Zone
RISK MANAGEMENT (Drought, sustainability, product prices).	<ul style="list-style-type: none"> Systems and information available to assist farmers to manage for droughts and risk. Climate as it affects disease prevention 	<ul style="list-style-type: none"> Fluctuating & uncertainty of product prices. Interrelationships with other enterprises on farm 	<ul style="list-style-type: none"> Increase use of forward selling techniques and contracts. Improve farm business management skills. Promotion of wool 	<ul style="list-style-type: none"> Seasonal fluctuations and fluctuating production Drought conditions affect production, supply, quality and sustainability of farms and related industries. World economic conditions Exotic diseases Climate change Market requirements on residues World trade arrangement Land conservation issues, air pollution and water degradation threatening production and processing operations.

6 OPPORTUNITIES AND ROLES ANALYSIS

DESCRIPTION OF POTENTIAL PROGRAMS

Immediately below is a description of the opportunities for wool industry development that were investigated. The value of the opportunities, once captured by industry, are given in Appendix 16.

6.1 ENHANCING MARKET DEVELOPMENT OF THE WOOL INDUSTRY

The wool industry is heavily reliant on exports. The International Wool Secretariat (IWS) provides a comprehensive service in developing overseas markets for wool. The role of Primary Industries, South Australia is to use this general support by IWS (and other key stakeholders), but more specifically to focus on market requirements of direct relevance to South Australian wools.

The aim of the program is assisting the wool industry to focus on the requirements of the market place, identifying any niche markets or unexploited markets for raw or processed wools. This will predominately be by education, study tours and facilitating the provision of better market intelligence, information and analyses.

6.1.1.a *Improve grower profits through greater understanding of wool market intelligence & analysis information.* Provision of services that will permit wool producers to more effectively identify and utilise the most efficient methods of wool marketing and risk management strategies. These services will include PISA transferring information to producers who desire to acquire the specialised skills themselves, and also consultancy services from the private and public sectors for producers who wish to employ specialist marketers.

6.1.1.b *Improve grower knowledge of alternative pricing and selling strategies.* Woolgrowers already have forward selling and futures trading instruments available to them, but they are little used. This is in sharp contrast to the cotton industry, where risk management associated with a volatile market place are common practice. Through its network of Livestock Officers and interaction with service providers such as brokers, the Australian Wool Exchange, IWS and other operatives, PISA can help improve grower knowledge of these alternative pricing and selling strategies to allow woolgrowers to make more informed business decisions.

6.1.2 *Introduce Niche marketing concepts to increase share of world fibre market.* Develop specialist high value markets based on the perception that Australian wool holds unique qualities for processors, manufacturers and end-users. Intrinsic qualities to be highlighted include developing a reputation that Australian wool has the status of being chemical-free, disease-free and of consistently high quality.

6.1.3 *Boost market share of higher micron wool.* Most South Australian wool is classed as medium to strong. Long term projections predict that this type of wool will continue to receive much lower prices than finer micron wool types. A strategy incorporating the latest CSIRO research to modify the intrinsic qualities of wool fibre, will enable lower micron wools to be directly substituted in the manufacturing process by wools of higher fibre

diameter. This would achieve greater price payments for the major types of wools grown in South Australia.

6.1.4 *Attract premium prices through the adoption of Total Quality Management systems.*

Total Quality Management (TQM) is a system that enables a guarantee (often according to ISO 9000 certification standards) to be provided in relation to the quality of the product at each stage of the production chain. The integration of TQM standards throughout the wool industry, from producer to manufacturer, will reduce overall processing costs and create a demand for wool handled in this manner. Processors and manufacturers adopting TQM standards will seek to exclusively acquire raw wool produced under TQM standards.

6.1.5 *Increase returns to growers and industry through the use of objective measurements that enable accurate prediction of processing performance.* Processors and manufacturers require a tightly specified raw product to predict processing performance and end-product specifications. Provision of in-depth objective information relating to the characteristics of raw wool being marketed allows buyers to more reliably assemble mill-lots. Consequently, such raw wool is sought-after, and greater buyer competition leads to a boost in prices.

6.1.6 *Better transport arrangements for wool between South Australia and the Northern Hemisphere.* Better export shipping arrangements for SA wools from the state of production will reduce on-costs and act as an incentive for buyers to purchase wools from the Adelaide auction. This would boost buyer competition and lead to an upward movement in prices.

6.2 ENHANCING PRODUCT DEVELOPMENT AND INNOVATION WITHIN THE WOOL INDUSTRY

6.2.1 *Development of new products/blends.* Opportunities exist to build more demand for wool, both in apparel and with interior textiles (especially in drapes and upholstery fabrics where current usage of wool is only 3% of all textiles used). The main stakeholders in helping industry to capture this demand would be the International Wool Secretariat in conjunction with key industry partners. PISA and SARDI's role would be minor, but might, as an example, include providing feedback to wool producers and service providers.

6.2.2 *Improving the scouring process.* Scouring of wool leads to a high level of fibre entanglement, which requires correction in latter stages of processing (carding and combing). It uses large volumes of water and energy and produces a high volume of effluent. CSIRO Division of Wool Technology conduct a major research and development program to reduce scouring and disposal of effluent costs and generally improve the scouring process. At this stage, no figures can be obtained on productivity increases or price increments that could be achieved. Whatever the case, PISA and SARDI's role would be as a support role to CSIRO.

6.2.3 *Increasing the productivity of carding & combing and the quality of wool top.* Again, CSIRO Division of Textile Technology has a number of major R & D programs in this area. These have involved G.H. Michell and Sons at Salisbury, SA as a key industry partner in the development and testing of high speed carding machinery. Other areas of work include the development of better lubricants to aid carding and combing of wool and generally reduce breakages, removal of contaminants during processing, and shrinkproofing of wool at the top stage. An area in which PISA and SARDI could assist CSIRO is in better prediction of finished top from sale lots, through finding and coordinating collaborative growers. To date, no figures can be obtained to allow calculation of Opportunity Values.

6.2.4 More domestic value adding activities. This includes more processing of wool (particularly early stage processing) within South Australia, apparel and interior textile design innovation etc. Through strategic partnerships with industry and other state government departments, PISA and SARDI could play an important coordinating role in attracting more investment in value adding activities within the SA wool industry. However, no attempt has been made yet to calculate Opportunity Values for this program.

6.3 IMPROVE WOOL QUALITY

This involves encouraging producers to meet the quality requirements of customers through:

- better communication of customers needs;
- improving wool quality attributes identified as important by customers;
- promotion to the SA wool industry of the benefits of quality management systems, and
- encouraging use of appropriate research, development and extension resources to improve wool quality.

A number of traits affect wool quality, such as fibre diameter, vegetable matter content, staple strength and staple length, position of break, colour, dark fibre content, style, fibre diameter variability and a number of others of varying importance. Some of these may be improved via genetic means or through changes in management, or both. Some key wool quality issues have been investigated, for which Opportunity Values are presented.

6.3.1 Genetically improve wool quality (Reduce fibre diameter, improve staple strength and style). South Australia's wool clip is 1.2 microns stronger than the Australian average, and suffers a price penalty. Conservative price premiums for finer diameter wools over SA wools are used to estimate Opportunity Values for reducing fibre diameter. Parts of the industry are already reducing fibre diameter and PI(SA) and SARDI could encourage this trend. Further, opportunities exist to improve tensile strength and avoid discounts for tender wool, and also to improve wool style, thereby attracting premiums.

6.3.2 Improve wool quality via management (Later lamb shearing). Most producers shear lambs at 3 to 5 months of age to bring them in line with the rest of the sheep and to avoid grass seed problems. However, this reduces the value of the fine lambs wool by reducing the length below combing length. It also incurs extra shearing costs. Returns can be increased by delaying lamb shearing to 9 to 15 months of age.

6.4 MAXIMISING COST/PRICE COMPETITIVENESS OF WOOL PRODUCTION

6.4.1 and 6.4.2 Improving pastures. Pastures provide the basic feed resource for the South Australian wool industry. The Wool Industry Development Plan aims to maximise pasture productivity through a range of targeted research, extension and regulatory programs. PISA, SARDI and the wool industry all make important contributions to these endeavours. Efforts to maximise productivity from pastures focus on three broad areas:

– *Improved pasture management* - a number of pasture improvement programs have been developed with the objective of achieving sustainable productivity increases across the high rainfall, cereal/livestock and pastoral zones. These programs seek to capture gains by maximising the effective utilisation of the existing feedbase through improved pasture management practices.

– *New cultivar development* - a strong focus is being directed toward the development of highly productive, better adapted cultivars to meet the exacting needs of South Australia's diverse environment. Lucerne, annual medics, subclover, balansa clover and perennial grasses feature in these development programs. These activities are supported by active foundation seed and seed certification programs.

– *Rhizobial strain development* - programs have been established to identify, select and commercialise improved strains of rhizobia which in turn have the potential to significantly improve the productivity of South Australia's pasture legume base.

The Wool Industry Development Plan ultimately seeks to promote an integrated pasture utilisation program based on the correct selection of pasture plants and appropriate pasture management techniques. A strong focus on sustainability issues will ensure that this objective is achievable over the long term.

6.4.3 Increase profits by improving farm clip preparation. Opportunities exist for woolgrowers to capture a higher return from their wool clip by optimising clip preparation. This can be achieved by obtaining detailed feedback from a Clip Analysis Service. Such a service is operational in Western Australia. Further, better training of shedhand staff can also lead to more optimum clip preparation and higher returns. There is plenty of room for improvement.

6.4.4 Develop alternative methods of wool harvesting to reduce costs (and increase profit). The cost of shearing and associated activities is one of the larger costs in producing wool. New methods of defleecing sheep, including robotic shearing and chemical defleecing, are being or have been researched by a range of organisations. In addition, better shearing equipment (better and longer-lasting combs, cutters and handpieces and shearing aids such as tables and harnesses etc), together with improved shearing shed design can all help to reduce the cost of shearing and improve clip preparation.

6.4.5 Later lambing. Although lambing later has been shown to be more profitable than April/May lambing most farmers have not changed because the change is complex. Farmers fear the problems they may experience with later lambing more than the problems they are familiar with in lambing early. On-farm studies show that where problems can be managed the Gross Margins per hectare increase by about 25% when lambing later. The extension program to help farmers make the change is underway and achieving desired adoption levels.

6.4.6 Drought strategy. PISA Livestock Advisers have a significant influence on how farmers manage their sheep during droughts. However, once a drought strikes options are often limited. If farmers adequately prepare for drought, and manage accordingly in all years, their options will increase. They will be able to carry more sheep in normal years, and they will reduce the economic loss and damage to soil and pasture, in drought years.

6.4.7 Lambing percent. The lamb marking percent in SA is relatively low. Studies have shown many factors are responsible. Some of these could be corrected easily and cheaply. These include raising body weights prior to mating, better nutrition during late pregnancy and lactation etc.

Animal Health

The Animal Health programs within PISA are designed to protect the superior health status of livestock in South Australia. Programs prevent the introduction of new or dangerous diseases or limit the market effects of existing diseases. They often fit into more than one commodity program because many stock diseases affect more than one class or species of animal. In some cases a disease is important because it affects humans as well.

Animal Health programs fit into two broad categories:

- **Disease Surveillance.** Disease surveillance is the process of assessing all available livestock disease information to prevent production or market losses of farm animals in South Australia. It also includes assessment of zoonoses (animal diseases transmissible to humans), foreign animal diseases and product residues.

The state government veterinary laboratory, VETLAB, provides a focus for diagnostic information.

Private farm losses are assessed mostly by owners and private veterinarians but any diagnostic information can be utilised for disease surveillance by the Department. Disease and residue prevention programs are included.

- **Disease Control.** PISA has a number of large, organised disease control programs. These are designed to eradicate or minimise an existing disease or residue by an active program of intervention. Programs are only undertaken if a significant economic benefit to the industry or the state will result. Programs for the benefit of individuals only, are left to owners.

Opportunity Values have been calculated for specific sub-programs, which are:

- 6.4.8 Residues
- 6.4.9 Exotic Diseases
- 6.4.10 Footrot
- 6.4.11 Minerals and Trace Elements
- 6.4.12 Toxicology
- 6.4.13 Parasites
- 6.4.14 Animal Welfare

6.5 IMPROVING SUSTAINABILITY OF WOOL PRODUCTION

6.5.1 Animal and Plant Control. To provide for the protection of resources for wool production by supporting the control of animals and plants that are or may become problems. Major opportunities relate to the control of rabbits, mice, foxes, pasture weeds, aquatic weeds in drainage channels, and plant burrs in wool, and to the protection of the wool industry from the effects of exotic animal disease and further pasture weeds and vertebrate pest species.

6.5.2 Farm Chemicals. To ensure there are suitable, effective and safe stock medicines available to growers to protect sheep from pests and diseases and thus enhance productivity.

Major activities include ensuring compliance with registration requirements, programs to minimise adverse drug reactions and to monitor residues of agricultural and veterinary chemicals, including organochlorines, organophosphates and synthetic pyrethroids.

6.5.3 Water Management. Stocking rate of some grazed land in the 400-600 mm rainfall zone is reducing due to salinisation occurring as a result of rising watertables (dryland salinity). A range of whole catchment management and agronomic strategies can be implemented to prevent further spread and to reduce existing impacts through land reclamation.

Where irrigation is used to maintain pastures for grazing during periods of insufficient fodder, application of improved irrigation management strategies can increase pasture production and reduce water waste, drainage and off-site impacts. In some areas salinity impacts due to the use of high salinity groundwater may be partly managed through irrigation practice.

6.5.4 Land Management. To protect and enhance the soil and land resource for the sustainable development of the wool industry. Major opportunities exist in the increases that can be achieved in pasture production through improved nutrition management in all agricultural areas. Significant opportunity can also be realised in the protection of current productivity, and increases in production of pasture through the better management of soil acidity. Other opportunities include the reduction of impact on soil structure of grazing sheep, improved vegetation and water management in the range lands, and in reducing the wind erosion effects caused by grazing animals.

6.5.5 Revegetation. The role of PISA's Revegetation Program is to facilitate the strategic use of perennial vegetation to enhance rural industries and the environment by protecting stock, crops, soil and water, diversifying incomes and enhancing biodiversity. The Program will do this by working with a wide range of industries and landholders, the broader community and associated organisations.

Shelterbelts reduce topsoil and nutrient losses during strong wind events particularly during the pasture establishment periods and when paddocks are used for feedlotting during droughts. Stock losses are also reduced with adequate paddock shelter. Catastrophic offshears losses can be prevented, and reductions in lamb mortality of 50% have been measured. Furthermore, a 50% reduction in windspeed due to shelter can reduce stock energy requirements by 18%.

Over 400,000 ha of agricultural land is at risk from salinity. Strategic tree and fodder shrub planting is one of a range of cost-effective management tools that can be used to slow or address salinity. Alley farming systems using fodder shrubs has been shown to increase carrying capacity by 300 to 800%.

Well designed and managed tree and shrub plantings can provide growers with financial returns from wood and plant products. For example, New Zealand experience has shown that well-managed double-row high-pruned timberbelts have the potential to yield more than \$10,000 per kilometre in South Australia's higher rainfall zones. Broombrush plantings on poorly productive land are expected to yield \$5,000 to \$10,000 per hectare to the net returns of growers.

Wool Industry Support Program by PISA and SARDI

To capture most of the opportunities listed above, it is necessary to have in place a range of government services to the wool industry. These include policy advice and policy development services, advisory services to industry groups and individuals, services to meet any legislative requirements, laboratory and other services not just aimed at increasing the contribution of the wool industry and livestock industries in general to the state economy, but also to maintain the contribution currently made. This contribution must not be taken for granted, as the contributions are quite large.

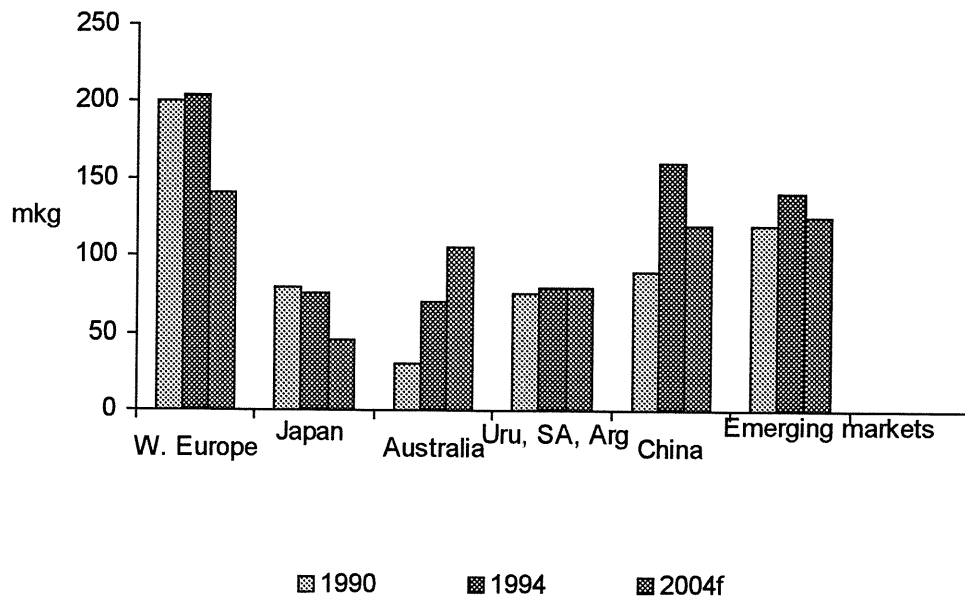
7 APPENDICES

Appendix 1: World Production of Fibres, 1989-94

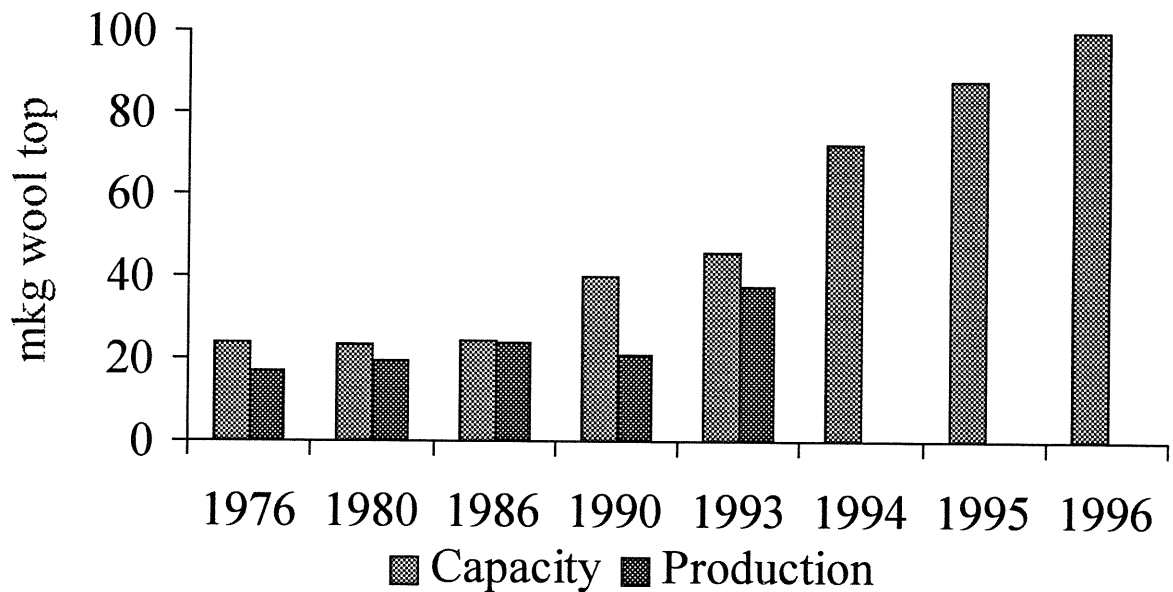
SEASON	WOOL (a) (mkg clean)	COTTON (b) (mkg)	MAN-MADE FIBRE (c) (mkg)	TOTAL (mkg)
1989/90	1,966	17,431	17,631	38,330
1990/91	1,935	19,006	17,642	38,591
1991/92	1,735	20,790	17,769	40,297
1992/93	1,674	18,760	18,289	37,933
1993/94 (P)	1,634	19,250	18,566	38,573
AVERAGE	1,789	19,047	17,979	38,745

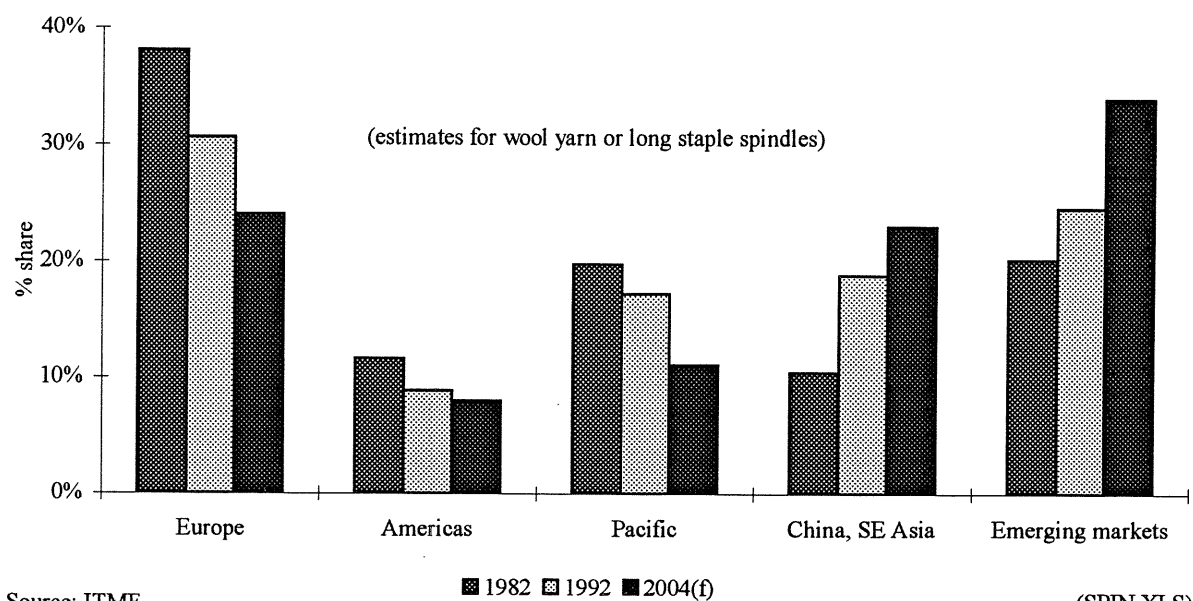
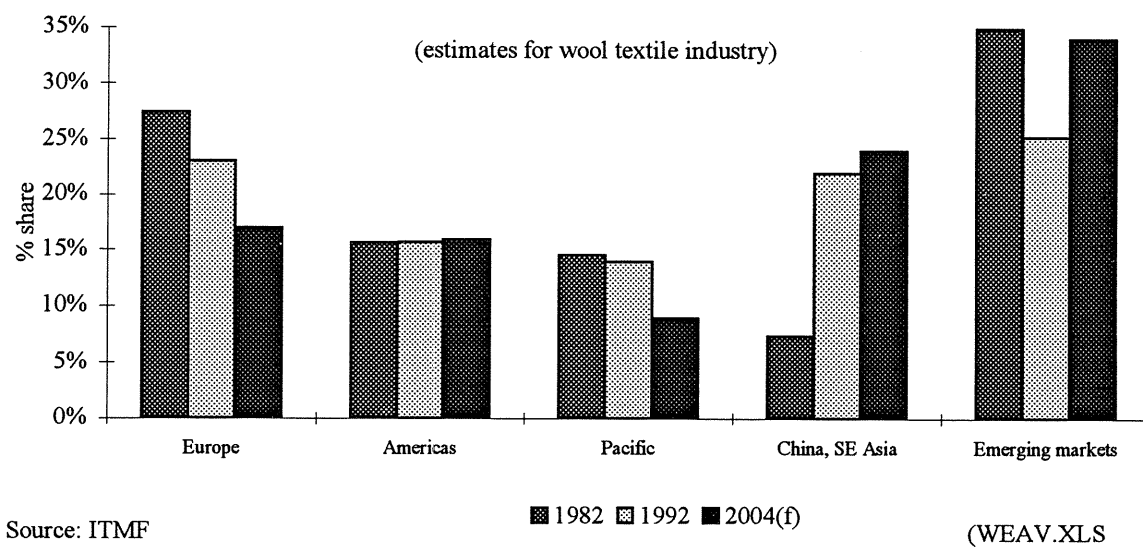
SOURCE: (a) International Wool Textile Overview (b) Cotton: World Statistics
(c) Fibre Organon (Calendar year) (P) Preliminary

Appendix 2: Relocation of Combing Capacity



Appendix 3: Australian Top Making Expansion Already Committed



Appendix 4: Relocation of Spinning Capacity**Appendix 5: Weaving Capacity Shifts**

Appendix 6: Mean Values of Staple Fibre Properties

Fibre	Fibre Diameter (microns)	Tenacity (g./den)	Tensile Strength (1000 p.s.i.)	Break elongation (%)	Density (g./cm. ³)	Thermal Softening (°F)	Thermal Melting (°F)	Moisture absorption (%)
Wool (64s Merino)	21	1.0	20	25	1.32	400 (Scorch)	570 (Char)	17
Cotton (various)	10-40			5-7				
Polyesters (Dacron T-54, Fortrel & Terylene)		3.8	65	30	1.38	453	490	0.4
Vycron		6.3	-	31	1.38	410	455	0.6
Kodel		2.7	43	27	1.22	-	544	0.2
Dacron T-64		3.0	52	28	1.38	453	485	0.8
Acrylics								
Orlon		2.4	36	24	1.14	455 (Stick)	480	1.5
Crylor		2.8	-	30	1.12	-	525	2.0
Acrilan		2.4	35	38	1.17	-	480	1.5
Courtelle		3.4	46	43	1.16	560 (Stick)	-	2.0
Creslan		3.3	41	32	1.18	433 (Stick)	-	1.3
Zefran		3.5	53	33	1.19	490 (Stick)	-	2.5
Nylons								
Nylon 66		5.2	80	50	1.14	455 (Stick)	482	4.5
Nylon 6		4.6	75	42	1.14	-	420	4.5
Polypropylene		5.0	70	20	0.90	285	325	-

SOURCE: Wool Handbook, 3rd Edition (Van Bergen)

Appendix 7: South Australian Wool Production

	Unit of Quantity	Year										Last 5 Year Average	10 Year Average
		1984/ 85	1985/ 86*	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91	1991/ 92	1992/ 93	1993/ 94(R)		
Shorn Wool	tonnes	102741	104704	107354	114169	113316	126515	112083	105005	109790	98100	110299	109378
Other Wool	tonnes	5722	6860	8452	8251	6980	9780	6486	5845	5614	6500	6845	7049
Total Wool	tonnes	108463	111564	115806	122420	120296	136295	118569	110850	115404	104600	117144	116427
Sheep Shorn	'000	20100	20400	20900	20468.9	20502.6	20867.8	20820.9	18906.7	18633.7	17641.8	19374.2	19924.2
Ave. Fleece Wt.	kg	5.11	5.13	5.26	5.44	5.37	5.46	4.85	4.98	5.32	5.0	5.12	5.19

* Changed method of collecting stats. R - Revised figures. NB: for 1994/95, shorn wool is forecast at 93,000 tonnes (and 7,000 other wool)

Appendix 8: Australian Wool Production

	Unit of Quantity	Year										Last 5 Year Average	10 Year Average
		1984/ 85	1985/ 86*	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91	1991/ 92	1992/ 93	1993/ 94(R)		
Shorn Wool	tonnes	752700	762100	813700	843000	898900	1030940	989180	801240	806000	774900	880452	847266
Other Wool	tonnes	61600	67400	76700	73400	60000	71060	76920	73760	58000	39100	63768	65794
Total Wool	tonnes	814300	829500	890400	916400	958900	1102000	1066100	875000	864000	800800	941580	911740
Sheep Shorn	'000	168200	173800	180800	186300	196400	215150	212900	181060	177000	174140	192049	186575
Ave. Fleece Wt.	kg	4.48	4.39	4.50	4.53	4.58	4.79	4.65	4.42	4.55	4.45	4.57	4.53

SOURCE| ABARE Commodity Statistical Bulletin 1993
Australian Wool Production Forecasting Committee (1993-94 & 1994-95)

Appendix 9: South Australian Wool Values

	Unit of quantity	Year										Last 5 Year Average	10 Year Average
		1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94		
Total Wool(a)	tonnes	108463	111564	115806	122420	120296	136295	118569	110850	115404	104600	117144	116427
Gross value - Wool(a)	\$'000	297183	330150	389279	575348	612190	579296	395816	324043	319097	260000	379250	410040
Ave Price(b)	cents/kg clean	457.81	493.40	557.90	786.21	859.01	734.89	547.89	490.23	452.20	428.01	530.64	580.76

Appendix 10: Australian Wool Values

	Unit of quantity	Year										Last 5 Year Average	10 Year Average
		1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94		
Total Wool(a)	tonnes	814300	829500	890400	916400	958900	1102000	1066100	875000	864000	800800	941580	911740
Gross value - Wool(a)	\$'000	2434400	2693400	3333600	5517300	5906000	5718100	4180900	2979500	2568000	2458500	3581000	3778970
Ave Price(b)	cents/kg clean	496.18	531.95	619.96	975.49	989.30	845.99	633.12	553.21	479.98	509.59	604.38	663.48

SOURCE| (a) Australian Bureau of Statistics
(b) International Wool Secretariat

Appendix 11: Percentage Distribution of Fibre Diameter for Wool Sold in South Australia and Australia as a whole

Selling Season	Fibre Diameter Range													
	15.6- 16.5	16.6- 17.5	17.6- 18.5	18.6- 19.5	19.6- 20.5	20.6- 21.5	21.6- 22.5	22.6- 23.5	23.6- 24.5	24.6- 25.5	25.6- 26.5	26.6- 27.5	27.6- 28.5	28.6- 29.5
1989/90	0.00	0.01	0.09	0.62	2.96	8.18	16.07	21.46	20.32	15.50	8.16	3.37	1.36	0.69
1990/91	0.00	0.00	0.17	1.36	5.78	12.71	21.75	22.57	18.89	10.33	3.92	1.21	0.51	0.26
1991/92	0.00	0.00	0.09	0.73	3.52	11.21	22.97	25.16	20.12	10.27	3.39	1.06	0.45	0.30
1992/93	0.00	0.01	0.05	0.35	1.62	5.75	13.23	22.73	24.18	18.36	8.98	2.57	0.93	0.30
1993/94	0.00	0.01	0.14	1.44	4.01	7.98	17.57	21.23	22.53	14.61	6.47	2.09	0.73	0.32
5 year average - South Australia	0.00	0.006	0.11	0.9	3.58	9.12	18.32	22.63	21.21	13.81	6.18	2.06	0.80	0.37
5 year average - Australia	0.05	0.52	2.35	6.07	12.48	19.52	20.94	15.90	8.94	4.81	2.36	1.34	1.09	0.95

* SOURCE: Australian Wool Sales Statistics 1993-1994 Season (Wool International)

Appendix 12: Wool Qualities and Quantity by Area in SA: 1989-90 to 1993-94^A.

Area of Origin		Fibre diameter ^C (micrometre)	Staple Strength ^C (newtons/ktex)	Vegetable Matter ^C (%)	% of Auction Sales
Unincorporated Far North	S01 ^B	25.7	36.5	1.35	0.01
	S03	23.3	36.6	2.07	0.30
	S04	23.7	36.2	2.04	2.68
Northern	S05	23.9	35.9	2.72	2.14
	S06	24.2	34.5	3.23	4.74
	S07	24.1	36.0	3.53	2.77
	S08	24.0	34.1	3.46	2.52
	S09	24.0	33.7	1.88	4.13
	S10	23.6	37.4	3.62	0.70
Eyre	S11	23.4	34.3	1.84	3.66
	S12	23.5	33.8	1.57	3.86
	S13	23.0	33.9	1.30	5.32
	S14	23.1	35.7	2.58	1.99
Yorke & Lower North	S15	23.9	34.2	1.90	8.61
	S16	24.0	35.1	1.33	0.95
	S17	23.8	34.5	1.35	2.81
Adelaide Outer Adelaide	S18	23.8	32.6	1.60	1.08
	S19	23.9	31.9	1.12	2.32
	S20	24.3	31.8	1.06	2.24
	S21	23.4	29.7	0.71	6.82
Murray Lands	S22	23.9	35.0	3.44	0.35
	S23	23.7	37.0	3.99	0.64
	S24	23.7	35.1	2.93	0.90
	S25	23.5	33.0	2.31	1.55
	S26	23.0	32.0	2.39	1.05
	S27	23.0	33.0	1.77	2.64
	S28	23.1	33.1	1.65	3.23
South East	S29	23.1	32.5	0.99	18.35
	S30	24.3	31.9	0.52	7.51
SA		23.6	33.4	1.67	15.21
Aust.		22.4	35.5	1.72	100.00

^A Based on auction sale lot data supplied by Wool International.^B One year (1989) only; the other areas of origin had wool in each season.^C Simple means for area of origin within years were weighted on total clean wool receipts.

Appendix 13: Exports of South Australian Wool for 1993-1994 season

Importing Country	Greasy Wool '000 kg	Scoured Wool '000 kg	Carbonised Wool '000 kg	Tops '000 kg	Noils '000kg	Waste Wool '000kg	Total Greasy Equivalents '000kg	Ranking
China P.R.	20879.6	1973.0	3041.0	48.0			28690.1	1
Taiwan	5657.2	39.5	150.0				5949.6	4
France	5464.5		115.4		9.0	654.9	6666.9	2
Japan	2722.1	194.5	1548.0				5410.7	5
Italy	2281.2	734.0	893.0	22.0	919.1	12.0	6262.2	3
Germany F.R.	2242.3		20.0				2273.2	7
India	2080.6	116.5	38.5		9.0	23.6	2370.1	6
Malaysia	1923.3						1923.3	10
U.S.A.	1514.9	70.9	187.4		128.4		2111.6	9
United Kingdom	1416.7	207.5	1.0		131.2	158.8	2185.9	8
Other	5260.0	1327.9	7081.1	15.7	74.1	345.9	18902.4	
Total	51437.7	4663.8	13075.4	85.7	1330.9	1195.5	82746.3	

* SOURCE: International Wool Secretariat

Appendix 14: Annual Greasy Equivalents from Australia - Mass^(a)

Country ^(b)	1984-85 mkg	1985-86 mkg	1986-87 mkg	1987-88 mkg	1988-89 mkg	1989-90 mkg	1990-91 mkg	1991-92 mkg	1992-93 mkg	1993-94 mkg
Japan	148.556	139.264	171.937	173.899	156.910	118.659	131.700	144.365	116.087	106.040
Italy	66.929	79.048	83.919	86.511	79.726	90.162	101.720	120.634	100.290	117.502
Peoples Rep. of China	50.608	77.083	105.277	93.900	58.709	26.102	49.591	107.015	165.817	187.370
France	63.331	65.113	64.741	57.975	67.467	55.929	62.664	76.041	60.680	72.008
Russian Fed. (Former USSR)	73.397	72.892	95.983	89.542	113.680	63.743	16.422	31.775	0.740	2.457
Germany	40.846	42.044	45.066	42.552	45.409	58.865	43.394	53.551	49.892	52.667
Taiwan	34.254	44.251	44.887	41.418	37.989	39.695	34.147	64.923	54.235	49.563
Korea	28.823	34.968	43.156	48.470	41.208	38.394	46.140	52.554	48.979	61.036
U.S.A.	25.966	34.018	41.706	40.303	37.410	26.105	36.796	42.799	42.943	47.310
Eastern Europe ^(c)	51.753	46.106	33.259	43.353	40.428	24.926	10.044	7.910	7.205	8.970
India	21.759	28.170	25.476	27.011	18.827	18.177	19.833	21.763	24.250	25.396
United Kingdom	20.989	29.961	29.437	25.240	20.560	16.068	14.047	21.072	25.545	23.447
Other Western Europe ^(d)	16.168	15.848	20.865	19.406	19.399	20.532	21.676	25.396	32.686	24.403
Belgium/Lux	13.136	14.504	15.069	20.421	13.721	14.518	8.903	29.176	13.778	3.403
Netherlands	10.576	18.397	7.893	8.181	10.267	41.089	7.171	9.784	3.899	2.003
Other	37.081	44.128	47.604	43.125	40.115	39.234	36.192	58.992	70.522	68.262
Total	704.172	785.795	876.275	861.307	801.825	692.198	640.440	867.750	817.548	851.837

(a) Includes Greasy, Scoured, Carbonised, Tops, Noils and Waste.

(c) Includes: Bulgaria, Czech Republic, Hungary, Poland, Romania, Yugoslavia, Croatia, Slovenia
SOURCE| Australian Bureau of Statistics

(b) In order of ranking. Country's ranking based on 10 years total cumulative exports.

(d) Includes: Greece, Portugal, Spain, Sweden, Switzerland, Turkey

Appendix 15: Annual Greasy Equivalents from Australia - Value^(a)

Country ^(b)	1984-85 \$Am	1985-86 \$Am	1986-87 \$Am	1987-88 \$Am	1988-89 \$Am	1989-90 \$Am	1990-91 \$Am	1991-92 \$Am	1992-93 \$Am	1993-94 \$Am
Japan	491.924	511.637	708.591	1185.345	1290.784	806.690	726.622	720.267	512.548	496.180
Italy	259.029	327.053	382.912	661.250	626.274	619.234	522.707	506.772	385.351	459.513
Peoples Rep. of China	182.953	314.528	444.032	514.714	376.910	156.774	189.235	423.350	675.752	668.915
Russian Fed. (Former USSR)	293.182	306.996	464.152	590.160	869.451	415.493	85.880	0.202	4.028	8.651
France	199.912	233.035	254.549	327.790	429.850	285.129	222.989	263.774	194.021	221.968
Korea	101.367	128.561	179.915	305.762	303.791	241.776	227.243	244.395	213.172	261.855
Germany	130.368	152.237	174.980	252.475	306.349	354.658	194.910	220.370	190.800	197.641
U.S.A.	87.219	132.118	173.804	270.677	272.229	172.539	172.109	168.109	161.549	166.832
Taiwan	94.713	130.962	147.688	224.046	212.514	163.308	108.522	212.245	180.993	152.592
Eastern Europe ^(c)	211.197	175.853	149.685	261.943	283.166	154.094	50.085	37.100	26.872	27.412
Other Western Europe ^(d)	76.111	89.587	109.342	161.672	138.056	111.901	84.400	94.469	117.960	76.717
United Kingdom	62.613	103.666	113.353	134.590	119.866	87.324	51.215	84.810	97.437	74.713
India	59.657	85.815	80.109	123.104	105.232	81.382	66.163	77.378	83.925	84.897
Belgium/Lux	36.527	46.646	54.432	140.278	102.699	90.470	43.488	118.299	48.118	9.717
Netherlands	35.617	61.939	29.814	49.187	69.064	247.311	34.158	45.559	14.969	10.027
Other	112.150	132.218	164.967	201.122	268.127	232.844	173.158	404.684	307.677	280.797
Total	2434.541	2932.854	3632.324	5404.115	5774.360	4220.926	2952.884	3621.783	3215.171	3198.427

(a) Includes Greasy, Scoured, Carbonised, Tops, Noils and Waste.

(c) Includes: Bulgaria, Czech Republic, Hungary, Poland, Romania, Yugoslavia, Croatia, Slovenia

(b) In order of ranking. Country's ranking based on 10 years total cumulative exports.

(d) Includes: Greece, Portugal, Spain, Sweden, Switzerland, Turkey

SOURCE| Australian Bureau of Statistics

SOUTH AUSTRALIAN WOOL INDUSTRY DEVELOPMENT PLAN

APPENDICES

Appendix 16: Opportunity Values for Programs Investigated by PISA and SARDI

Opportunities: Program Titles	Total NPV (\$ Millions)	Annualised NPV (\$ Millions)
a. Developed by Wool Industry Planning Group		
6.3.1 <i>Genetically Improve Wool Quality</i>	44.614	7.658
6.4.6 <i>Drought Strategy</i>	44.397	7.621
6.4.5 <i>Later Lambing</i>	38.249	6.566
6.4.7 <i>Lamb Marking Rate</i>	30.188	5.182
6.1.4 <i>Total Quality Management</i>	18.343	3.149
6.1.2 <i>Clean Green Promotion</i>	16.482	2.829
6.4.3 <i>Clip Analysis & Shedhand Training</i>	16.453	2.824
6.3.2 <i>Improve Wool Quality by Management</i>	14.523	2.493
6.1.1a <i>Market Intelligence & Information</i>	7.510	1.289
6.1.5 <i>Objective Measurement & Processing Prediction</i>	5.617	0.964
6.1.1b <i>Alternative pricing and selling strategies</i>	2.288	0.393
6.2.1 <i>New Products/Blends & Increase Value Adding</i>	1.661	0.285
6.1.3 <i>Increase 24 μm Price</i>	0.652	0.112
6.4.4 <i>Alternative Harvesting Technology</i>	0.493	0.085
6.2.2 <i>Improving the Scouring Process</i>	no figures	no figures
6.2.3 <i>Increasing the productivity of carding & combing & the quality of wool top</i>	no figures	no figures
6.1.6 <i>Transport efficiency</i>	no figures	no figures

Appendix 16: Opportunity Values for Programs Investigated by PISA and SARDI cont'd

Opportunities: Program Titles	TOTAL NPV (\$ millions)	ANNUALISED NPV(\$ millions)
b. Developed by Pasture Coordinating Group		
6.4.1 <i>Improved pasture management: High Rainfall Zone</i>	58.852	10.103
6.4.2 <i>Improved cereal & livestock production the Cereal Livestock Zone</i>	23.920	4.106
c. Developed by Animal Health/Vet Lab		
6.4.13a <i>Internal Parasite Control in Sheep</i>	39.4264	4.9008
6.4.9 <i>Exotic Diseases</i>	28.7652	4.938
6.4.10 <i>Footrot Control</i>	27.4696	4.7152
6.4.13b <i>Sheep Lice - Lice Check</i>	12.679	2.177
6.4.8 <i>Residues</i>	11.8931	2.0416
6.4.11 <i>Control of Mineral Disorders in Sheep</i>	4.0096	0.6888
6.4.14 <i>Animal Welfare</i>	1.4076	0.2415
d. Developed by Sustainable Resources Group		
6.5.1 <i>Animal and Plant Control</i>	265.66	27.08
6.5.2 <i>Farm Chemicals</i>	179.40	18.28
6.5.3 <i>Water Management</i>	95.65	9.74
6.5.4 <i>Land Management</i>	94.40	9.61
6.5.5 <i>Revegetation</i>	18.26	1.63

Appendix 17: Acknowledgements

This plan has been developed by staff of Primary Industries, South Australia (PISA) and the South Australian Research and Development Institute (SARDI), in conjunction with a peak wool industry body, the Sheep and Wool Advisory Group (SWAG).

During 1993, PISA and SARDI formed industry planning groups to draft industry development plans. The Wool Industry Planning Group within PISA and SARDI has had the following membership:

Primary Industries, South Australia

Forbes Brien	Program Manager, Wool and Chairperson
Brian Ashton	Senior Livestock Adviser, Port Lincoln
Denice Rendell	Livestock Adviser, Streaky Bay
Albert Singh	Senior Livestock Adviser, Jamestown
Dale Manson	Senior Livestock Adviser, Murray Bridge
Tim Woonton	Senior Livestock Adviser, Kangaroo Island
Dave Powell	Port Augusta
Anne Gibson	formerly Senior Livestock Adviser, Port Augusta
Jim Cawthorne	Service Delivery Manager, Port Augusta
Peter Allen	Program Manager, Animal Plant Control Commission

South Australian Research and Development Institute

Andrew Craig	Senior Research Officer, Kybybolite
Malcolm Fleet	Senior Research Officer, Turretfield Research Centre
Raul Ponzone	Principal Geneticist
Jim Walkley	Formerly Livestock Scientist
Dennis Gifford	Formerly Livestock Scientist
David Kleemann	Formerly Livestock Scientist

Sheep and Wool Advisory Group

A sub-group from SWAG worked closely with PISA and SARDI staff. This sub-group had the following membership:

Ian Rowett	Woolgrower, Wool Councillor
Don Blesing	Woolgrower and consultant
Peter England	Woolgrower, Chairperson IWS High Rainfall Zone Committee
Chris Paltridge	Manager, Wool, Elders Pastoral
John Cornish	Executive Officer, Wool & Meat Section, South Australian Farmers Federation (SAFF)
David Jupp	Farm Overseer, GH Michell & Sons Pty Ltd
Andrew Nicolson	Woolgrower, member IWS Pastoral Zone Committee
Jim Ashby	Woolgrower, member IWS Cereal Sheep Zone Committee

Peter Conrick, of IWS, supplied some of the graphs and Roger Edwards, of ARMS, provided a consultancy on calculation of Net Present Values.

Finally, Geoff McLean, Senior Economist, and Garry Osborne, Principal Economist, both of PISA, contributed significantly to writing and editing the final document.

Appendix 18: Bibliography

- BANKS, R.G. (1987). The breeding structure of the Merino industry and its influence on genetic progress. In 'Merino Improvement Programs in Australia' (Ed. B.J. McGuirk) pp. 125-135. (Australian Wool Corporation: Melbourne).
- GARNSWORTHY, R.K., GULLY, R.L., KANDIAH, R.P., KENINS, P., MAYFIELD, R.J. and WESTERMAN, R.A. (1988). Understanding the causes of prickle and itch from the skin contact of fabrics. Report G64, CSIRO Division of Wool Technology, Geelong Laboratory.
- METCALFE, P.L. (1995). Quality Assurance Schemes for Western Australian Wool. *Proceedings of the 1995 Sheep and Wool Refresher Course "Quality Processes and their Application in the Wool Industry, held in Melbourne, 16-17 March 1995 (Edit. F.D. Brien, in preparation).*
- PLATE, D.E.A. (1992). Characteristics of the Australian woolclip of importance to the manufacturer and end user. *Proceedings of the 1992 Michell Sheep Research Forum* pp. 59-71.
- SHORT, B.F. and CARTER, H.B. (1955). *CSIRO Bulletin No. 276.*
- VANDELEUR, P. (1995). Quality Processes and their Application in the Wool Industry. *Proceedings of the 1995 Sheep and Wool Refresher Course "Quality Processes and their Application in the Wool Industry, held in Melbourne, 16-17 March 1995 (Edit. F.D. Brien, in preparation).*
- WHITELEY, K.J. (1992). Trends in wool processing requirements. *Proceedings of the Australian Sheep Veterinary Society, Australian Veterinary Association Conference, Adelaide, May 10-15, 1992* pp. 1-5.