

final report

Project code: SHGEN.011
Prepared by: Geoff Duddy
Date published: April 2002
ISBN: 1 740362675

PUBLISHED BY
Meat and Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

New and Introduced Sheep Breeds in Australia

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

This publication is published by Meat & Livestock Australia Limited ABN 39 081 678 364 (MLA). Care is taken to ensure the accuracy of the information contained in this publication. However MLA cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests. Reproduction in whole or in part of this publication is prohibited without prior written consent of MLA.

Table of Contents

Introduction	2
Fat Tail Breeds suited for Live Sheep Export	3
Afrikaner	4
Purebred Characteristics:.....	4
Introduction into Australia.....	5
Awassi	7
Purebred Characteristics.....	7
Introduction into Australia.....	8
Damara	9
Purebred Characteristics.....	9
Introduction into Australia.....	10
Karakul	12
Purebred Characteristics.....	12
Introduction into Australia.....	13
Van Rooy	14
Purebred Characteristics.....	14
Introduction into Australia.....	15
Prime Lamb Production Breed	17
Dorper	17
Purebred Characteristics.....	18
Introduction into Australia.....	18
Dohne	20
Purebred Characteristics.....	20
Introduction into Australia.....	21
South African Mutton Merino (SAMM)	22
Purebred Characteristics.....	22
Introduction into Australia.....	23
Marketing	24
Live Sheep.....	24
Carcase Markets.....	26
Clip Contamination Concerns and Findings	31
1. Pigmented Fibres.....	31
2. Kemp/Medullated Fibres.....	31
Management Recommendations	32
Appendix A	33
Appendix B	34
Appendix C	35
Industry Contacts	35
General (all breeds).....	35
Afrikaner.....	35
Awassi.....	35
Damara.....	35
Dohne.....	36
Dorper.....	36
Karakul.....	37
SAMM.....	37
Van Rooy.....	37
Additional Contacts.....	38

Introduction

The following advisory package provides an insight into the recently introduced 'exotic' sheep breeds in Australia. Breed characteristics, perceived advantages, disadvantages and areas of concern to the Wool and Meat Industries of NSW and Australia are outlined.

Much of the information pertaining to the newer breeds introduced from South Africa has been provided by industry. Unfortunately, at the time of preparing this package, many of the perceived advantages of the breeds in question have not been fully validated under Australian conditions.

Contacts and reference sources are listed after each breed outlined. There should not be seen as an endorsement of any person, party or organisation.

Geoff Duddy
NSW Agriculture
YANCO NSW 2703
Email: geoff.duddy@agric.nsw.gov.au
Ph:(02) 6951 2688
Fax: (02) 6951 2600

Fat Tail Breeds suited for Live Sheep Export

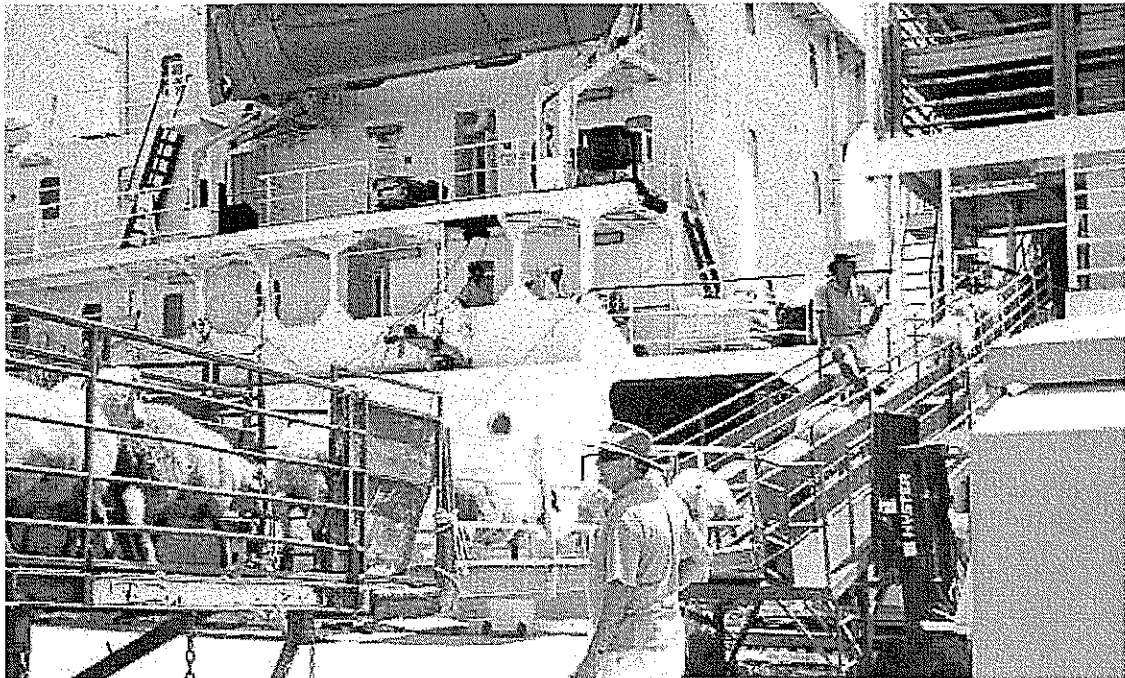


Figure 1

Afrikaner

An indigenous breed of South Africa, there are several varieties of Afrikaner, two of which (the Namaqua and Steekhaar Ronderib) are endangered species. A third, the Blinkhaar Ronderib Afrikaner has recently been re-introduced into Australia. Ronderib Afrikaners were the first sheep ever imported into Australia; arriving on the first fleet in 1788 from South Africa.

The breed has evolved after minimum selection from indigenous sheep found in Namibia in southern Africa and the former Cape Colony. One of the oldest and larger framed breeds of sheep in South Africa the Afrikaner were used as a basis for the breeding of Karakul sheep and the development of the Dorper and Van Rooy.

Afrikaner were initially selected for production of skin blankets (velkomberse) and as a dual purpose breed for marginal and arid regions of South Africa.

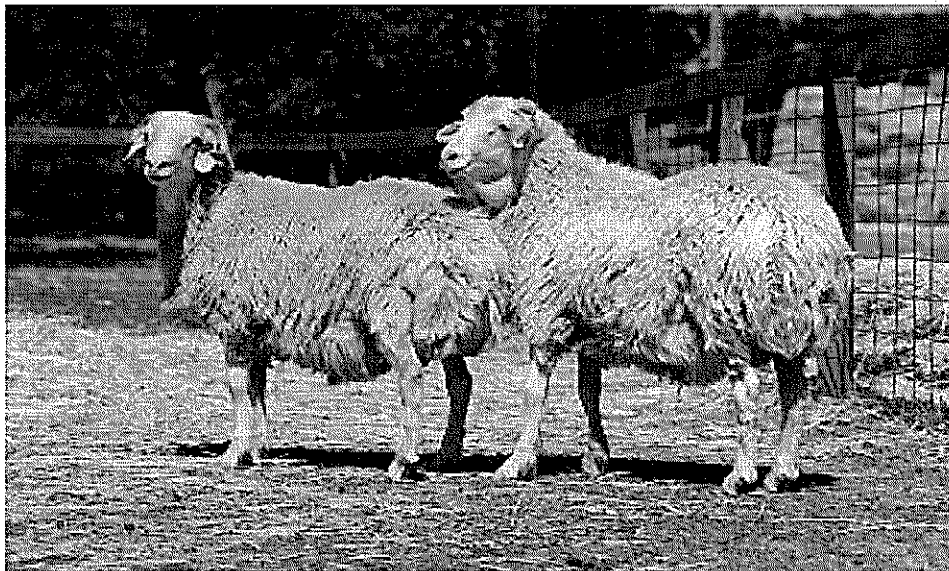


Figure 2 Afrikaner ewes (Source: Bronte Gardner – WA)

Purebred Characteristics:

- A fat-tailed white wool breed with soft shinny kemp free hair.
- Tail consists of a 'fat reservoir' upper section and two smaller lower sections that form an 'S' shape tip that finish just above the hocks.
- The fat stored in the tail is drawn upon in times of nutritional and/or physiological stress.
- An uneven distribution of fat along the carcass allows the animal to shed heat more easily than traditional Australian/European breeds.

- Ribs are oval in cross section rather than flat, giving rise to the breed's name (*Ronderib* = 'round rib').
- Well adapted to desert conditions with the ability to survive extended periods without water (provided succulent plants are available).
- Long, strong legs, closely set hocks and an oval respiratory tract enable the Afrikaner to cover long distances in search of grazing and water.
- A shedding wool breed, characterised by a shiny, white, kemp free fleece that is shed annually. The hair is soft, shiny and pliable (not brittle) unlike other fat-tail breeds.
- Non-selective feeders consuming shrubs and grasses seldom grazed by traditional Australian breeds.
- Extremely strong maternal and flocking instincts ensure minimal losses through predation and ease of mustering.
- Ewes are sexually active at a young age and poly-oestrous (no defined breeding season) and will generally mate year-round.
- Rams are sexually very active and joining percentages of 1.0% (1:100) are possible. Rams are frequently used as 'teasers' for other breeds in South Africa.
- Do not require shearing, crutching, tailing or preventative flystrike treatment.
- Have a reported high natural resistance to internal and external parasites.
- Lambs have exceptional vigour at birth and an extremely strong survival instinct.

Introduction into Australia

Ronderib Afrikaner embryo's were imported into Western Australia and South Australia from South Africa in 1998. Namaqua Afrikaner embryos were imported into Western Australia in 2001 with live lambs to be born in May 2002. To date there has not been a widespread release of Afrikaner genetics. Upgrading and crossbreeding with Merino ewes and several of the other fat-tail breeds is underway. The development of a shedding 'Awassi' style crossbred using the Afrikaner is one area currently being investigated.

F1 and above crosses would suit the live sheep and export carcass trades into the Middle East and Malaysia/Asia (where the fat-tail is preferred over traditional Merino wether) and a strong Muslim population base is found. F1 Merino crosses may require shearing and crutching.

The Ronderib Afrikaner were selected heavily against fleece colour and consequently skin pigmentation may be an issue with respect to photosensitivity and/or sunburn. Breeding selection of stock for pigmentation around the eyes, nose, ears and hooves may reduce sunburn risk.

Although a soft, kemp free hair, breed medullated fibres are present and the Afrikaner therefore poses concerns for the Australian wool industry due to the presence of occasional hair fibres. Management programs must therefore be developed and implemented nationally to minimise clip contamination risks. Clip contamination issues and research findings are covered in greater detail in the *Clip Contamination* chapter of this package.

The Afrikaner should suit the pastoral and semi-arid to arid regions of Australia.

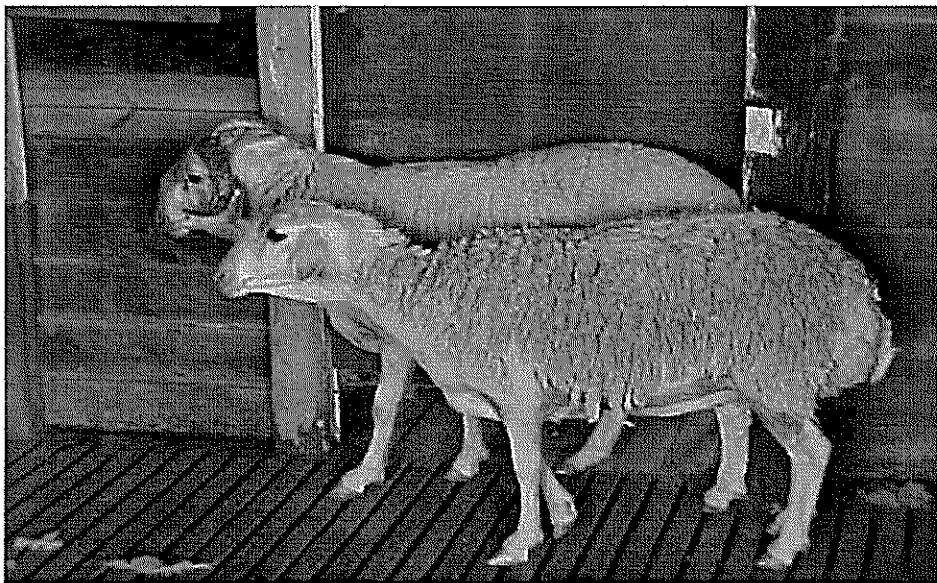


Figure 3 Afrikaner ewes (Source: Geoff Duddy – NSW)

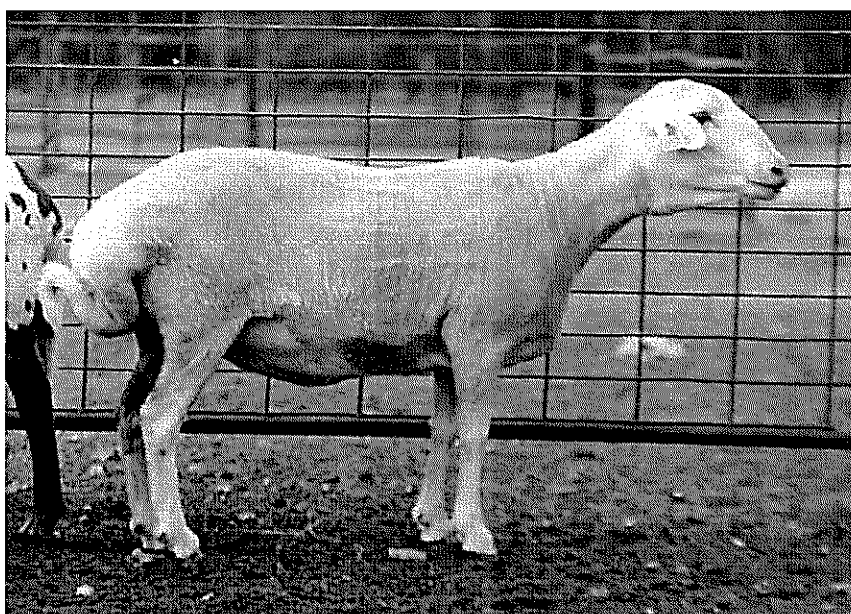


Figure 4 Shorn Afrikaner Ewe (Source : Denis Russell – Greenlink, South Australia)

Awassi

The Awassi is a fat-tailed sheep highly valued for meat, milk or carpet wool production. The most recognised and widely distributed breed of fat-tail sheep in the world, the Awassi is commonly found in south-west Asia and much of the Middle East.



Figure 5 Awassi Ram (<http://www.ansi.okstate.edu/breeds/sheep/awassi/Index.htm> - Oklahoma State University Breeds of Livestock webpage)

Purebred Characteristics

- A large framed, fat-tail breed.
- The tail is broad and relatively short, usually ending above the hocks. It consists of large fat sacs on both sides along much of its length, with an 'S' shaped tip.
- Tail size and weight depends on sex (rams may have tails weighing up to 12kg, ewes may reach 6kg) and the animal's condition. The tail acts as an energy source with fat deposits used in times of nutritional or physiological stress.
- Brown or black head, ears, legs and neck.
- Rams are generally horned and ewes polled with a 'roman' nose and long pendulous ears.
- Awassi have a double-coated fleece containing a high proportion of medullated fibres (fleeces commonly contain 45% hair, 39% wool, 10% heterotype and 6% kemp fibres). Three quarter ($\frac{3}{4}$) Awassi crosses and higher produce wool suited to the speciality carpet wool industry.
- The Awassi will commonly yield 3kg of white 35 micron wool with a yellowish hue annually. Pigmentation is confined to the kemp fibre fraction of the fleece.
- May require 8-10 monthly or twice yearly shearing.

- Recognised as one of the best dairy breeds in the world, producing on average 1.75 litres per day over a 200-day lactation.
- Known to conceive while lactating, the Awassi has an extended breeding season with a generally low (5-10%) twinning rate.
- A calm, easy care, hardy breed, well suited to pastoral and arid environments.

Introduction into Australia

The Awassi breed was first imported into Australia in 1985 (Western Australia) and 1995 (NSW). In 1985 shareholders of the *Awassi Sheep Joint Venture* in Western Australia imported frozen embryo's from Cyprus. A seven year 'scrapie freedom assurance' quarantine program culminated with the release of Awassi from quarantine in 1993 and the subsequent commercial development of Awassi cross animals for live sheep export.

Awassi Australia, a NSW based company, imported frozen embryos from leading Israeli sheep dairy studs in 1991. Live animals were released from a four year quarantine program in New Zealand in 1995 and are now the basis of a commercial milking enterprise in central NSW. With increased live sheep demand *Awassi Australia* have expanded operations to include a live sheep export breeding program

The Awassi breed has the potential to enable the development of markets internationally for live and chilled fat-tail carcasses and a specialised sheep dairy industry for the export of milk and milk products. Additionally, the Awassi could service the carpet wool industries nationally and abroad, replacing current imports of carpet wool into Australia. (To date there has not been a release of genetics to industry other than through contract matings).

A coloured carpet wool breed the Awassi poses some concerns for the Australian wool industry if management programs are not developed and implemented nationally to minimise clip contamination risks. Clip contamination issues and research findings are covered in greater detail in the *Clip Contamination* chapter of this package.



Figure 6 Awassi lambs (Source: John Grant – NSW)

Damara

The Damara is a native fat-tailed hair sheep originating from ancient breeds in East Asia and Egypt. For many years the breed were in an isolated region of Namibia in southern Africa, remaining free of influence from other breeds.

An extremely hardy breed, the Damara have developed initially through natural selection and more recently through improved breeding and selection in South Africa.



Figure 7 Damara ewes (Source: Geoff Duddy – NSW)

Purebred Characteristics

- A fat-tailed coloured hair breed.
- Tail tapers to a thin end stretching to below the hock. Fat stored in the tail is utilised during times of nutritional and/or physiological stress.
- Damara have a short, hairy coat with a dense undercoat of fine wool fibres shed annually.
- Coat colours vary from white, brown, black and white frequently with black spots.
- An exceptionally hardy breed able to survive and produce under pastoral to arid conditions. Long legs and a short, trotting gait allow the breed to travel long distances in search of feed and water.
- Rams are robust (90kg) and masculine with well developed spiral horns. A prominent roman nose and dewlap under the chin are characteristic of the breed.

- Ewes are feminine in appearance (60kg), have smaller horns close to the head with a slightly roman nose and brownish eyes protected by well developed eyebrow ridges.
- Ears are moderate in size and mobile, with a well developed 'cushion' of fat behind the head which is thought to aid with heat tolerance.
- Non-selective feeders, their diet consists of approximately 40% grass and low shrubs and 60% tall shrubs and trees.
- Extremely strong-maternal and flocking instincts ensure minimal losses through predation and ease of mustering.
- A fertile breed with up to 100% lambing in semi-arid conditions (twinning rates are low).
- Ewes are sexually active at a young age, have no defined breeding season and will generally join year-round.
- Rams are sexually active and joining percentages as low as 0.75% (1:150) are possible.
- Do not require shearing, crutching, tailing or preventative flystrike treatment.
- Have a reported high natural resistance to internal and external parasites.

Introduction into Australia

Introduced into Western Australia in 1996 from South Africa (embryos and semen). The Damara's easy care, minimal management benefits and an improvement in live sheep demand has seen a rapid increase in numbers nationally.

F1 and above crosses suit the live sheep and export carcass trades into the Middle East and Malaysia/Asia (where the fat-tail is preferred over traditional Merino wether and a strong Muslim population base is found).

F1 merino crosses may require shearing and crutching.

A shedding, coloured hair breed the Damara poses some concerns for the Australian wool industry if management programs are not developed and implemented nationally to minimise clip contamination risks. Clip Contamination issues and research findings are covered in greater detail in the *Clip Contamination* chapter of this package.

The Damara would suit the pastoral and semi-arid to arid regions of Australia.



Figure 8 Damara ewes (Source: Geoff Duddy – NSW)



Figure 9 Damara ewes (Source: Geoff Duddy – NSW)

Karakul

Native to the deserts of Central Asia, the Karakul is one of the world's oldest breeds and possibly one of the first domesticated breeds. A hardy, carpet wool breed, Karakul were originally bred for the value of the 1-3 day old lamb pelt ('astrakhan'), a patterned silky pelt of exceptional quality.

The breed evolved naturally and with minimal selection in high altitude, desert environments and has an ability to thrive under adverse conditions.



Figure 10 Karakul ewes and lambs (Source: <http://www.albc-usa.org/karakul.htm>)

Purebred Characteristics

- A fat-tailed coloured carpet wool breed.
- Medium-size sheep with a long, narrow body, sloping rump and low set broadtail with an 'S' shape base.
- Fat stored in the tail is drawn upon in times of nutritional and/or physiological stress.
- A double-coated fleece consisting of outer hairy fibres and woollen and/or guard hair undercoat. The fleece is usually black but red, brown, greys and white variants are possible.
- Purebred lambs are usually born coal black with lustrous wavy curls, their face, ears and legs covered in sleek hair. With age the fleece turns brownish or a bluish grey.
- Long, narrow head with a 'roman' nose and pendulous ears.
- Rams may be horned or polled, generally weighing between 80-100 kg.
- Ewes are generally polled, weighing from 45- 70 kg.
- May require 8-10 monthly or twice yearly shearing.

- The Karakul will commonly yield 2.5 to 4.5kg of 35 micron crimp free, high-volume fleece which is easily spun for use in rugs, saddle blankets, outer garments and wall hangings.
- Strong maternal instincts.
- An extended breeding season although prolificacy is low, with twins or triplets uncommon.
- Reported high resistance to internal and external parasites.
- Excellent foragers, able to survive under harsh feed conditions and able to withstand extremes of either hot or cold conditions.

Introduction into Australia

Frozen embryos were initially imported from Texas (US) and quarantined on Torren's Island (WA) during the 1980s in a joint University of NSW/Elders venture. Originally stationed at Hay, NSW under the guidance of researcher Prof Euan Roberts, Fares Rural (Western Australia) have continued to increase stock numbers through contract matings in Western Australia and more recently South Australia.

F1 and above crosses suit the live sheep and export carcase trades into the Middle East and Malaysia/Asia (where the fat-tail is preferred over traditional Merino wether and a strong Muslim population base is found).

A coloured hair breed the Karakul poses some concerns for the Australian wool industry if management programs are not developed and implemented nationally to minimise clip contamination risks. Clip Contamination issues and research findings are covered in greater detail in the *Clip Contamination* chapter of this package.

To date there has not been a release of genetics to industry other than through contract matings.

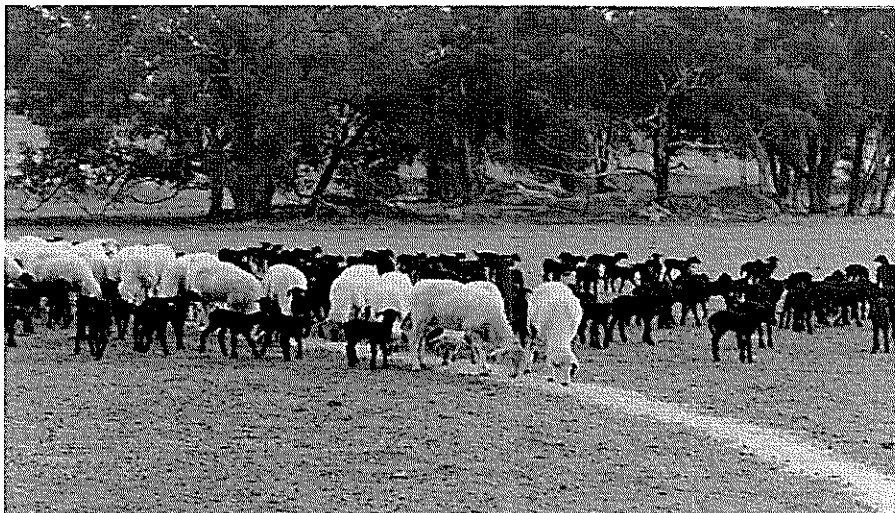


Figure 11 Karakul ewes and lambs (Source: Gary Tapscott – South Australia)

Van Rooy

A synthetic breed developed by Senator J.C. van Rooy in South Africa in 1906. Through crossing a "Blinkhaar Afrikaner" ram and Rambouillet ewes, inbreeding progeny and crossing these with a Wensleydale ram carcass, conformation was improved without the loss of fat localisation on the rump.

Due to the breed's hardiness the Van Rooy has been used in the development of several South African breeds including the White Dorper. Many South African producers have crossed them with the Dorper, White Dorper, the Dohne and other breeds to produce a heavier slaughter lamb.



Figure 12 Van Rooy ewes (Source: Denis Russell – Genelink, South Australia)

Purebred Characteristics

- A fat-tail white hair breed.
- The tail consists of a main upper part (broad, firm, oval at the base) and the switch which hangs down vertically.
- Fat stored in the tail is drawn upon in times of nutritional and/or physiological stress.
- A hardy breed suited to pastoral and arid regions the Van Rooy is covered in strong, white, calcareous hair and a short woollen undercoat which is shed annually.
- Rams are polled or may have scurs, ewes are generally polled.

- Slight roman noses with localised fat on either side of the nasal bone and behind the ears.
- Long and broad ears are typical of the breed.
- Van Rooy are well fleshed with square forequarters.
- Excellent foragers with a strong constitution and maternal instincts.
- Reported high resistance to internal and external parasites.

Introduction into Australia

Van Rooy embryos were imported by Genelink (South Australia) in 1998. Renamed the 'White Persian' upgrading and cross breeding with merino ewes and several of the other fat-tail breeds is currently underway.

F1 and above crosses suit the live sheep and export carcass trades into the Middle East and Malaysia/Asia (where the fat-tail is preferred over traditional Merino wether and a strong Muslim population base is found).

A shedding hair breed the Van Rooy poses some concerns for the Australian wool industry if management programs are not developed and implemented nationally to minimise clip contamination risks. Clip contamination issues and research findings are covered in greater detail in the *Clip Contamination* chapter of this package.

The Van Rooy would suit the pastoral and semi-arid to arid regions of Australia.

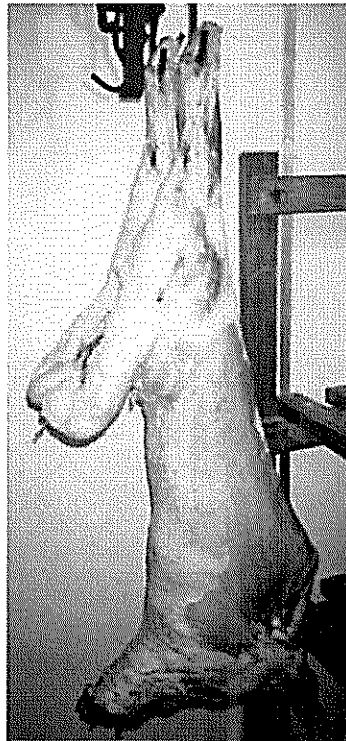


Figure 13 Van Rooy carcass (Source: Denis Russell – Genelink, South Australia)



Figure 14 Van Rooy ewes (purebred) – (Source: Denis Russell – Genelink South Australia)

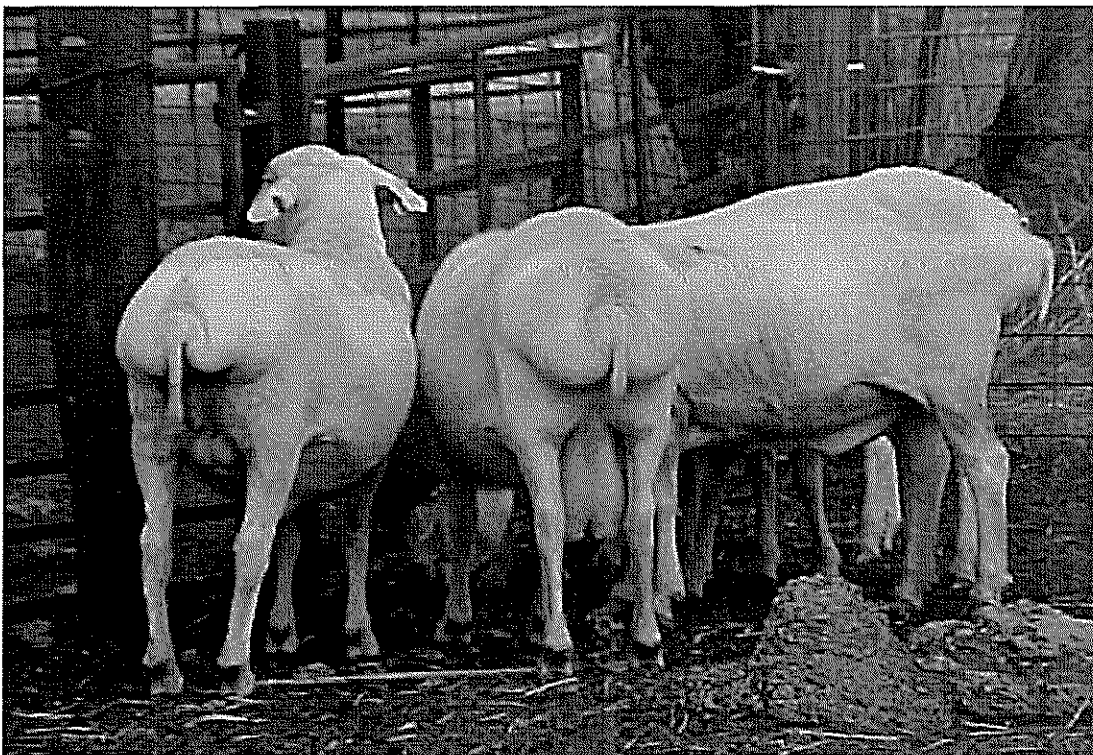


Figure 15 Van Rooy (Source: Geoff Duddy – NSW)

Prime Lamb Production Breed

Dorper

A South African mutton breed developed in the 1930s through the crossing of Dorset Horn rams and Blackhead Persian ewes (a shedding, fat-rump, hair breed). Selection over time led to the development of the Dorper (black head, white body) and the White Dorper (white).

South African folklore maintains that several white head Dorper lambs were born during the initial development of the breed. These lambs were ultimately used during the development of the White Dorper breed as we know it today however it is highly likely that the Van Rooy has also been used to improve conformation and maintain white points. Both are collectively known as the 'Dorper' within South Africa, sharing a common Breed Society.

Dorpers are numerically the second largest sheep breed in South Africa, replacing the Merino in much of the arid regions. The breed was established to fulfil a need to produce good quality mutton and prime lambs off extensively grazed arid country.



Figure 16 Dorper Ram (Source: Denis Russell – Genelink, South Australia)

Purebred Characteristics

- Generally a poll breed with short black (Blackhead Dorper) or white (Whitehead Dorper) hair on the head and neck.
- Characterised by a short, loose covering of hair and wool (wool predominantly on forequarter), minimal breech wool and a natural, clean kemp underline.
- There appears to be no difference in productivity between the Dorper and White Dorper.
- A shedding breed, requiring little if any shearing or crutching, reducing the breeds susceptibility to flystrike.
- Non-selective feeders consuming shrubs, grasses which are seldom grazed by traditional Australian breeds.
- Dorper rams commonly weigh from 90-120kg and ewes from 50-80kg.
- Extended (non-seasonal) breeding season and fertile with lambing percentages in excess of 150%.
- Excellent carcase conformation.
- Thick skinned, protecting the sheep under harsh climatic conditions.
- High quality skins.

Introduction into Australia

Selected Dorper embryos were imported into Western Australia in 1996. White Dorper embryo's were imported into Western Australia and South Australia in 1997. Both have since expanded into most mainland states of Australia.

The Dorper has proven to be an extremely hardy breed under Australian conditions. Crossed primarily with Merino ewes the Dorper/merino cross has shown excellent growth rates without excessive fat deposition.

Suited to both domestic and export carcase weight production.

Dorper sired first cross generally have a piebald fleece with shades of black and tans common. Second cross lambs will show the characteristic black head and neck markings of the Dorper sire. The White Dorper sired cross will produce predominantly white progeny.

A shedding, coloured wool and hair breed the Dorper poses some concerns for the Australian wool industry if management programs are not developed and implemented nationally to minimise clip contamination risks. White Dopers and crosses do not pose a coloured contamination threat but there are concerns with respect to hair, kemp and medullated fibre contamination potential. Clip contamination issues and research findings are covered in greater detail in the *Clip Contamination* chapter of this package.

The Dorper provides producers in marginal pastoral areas of Australia with an opportunity to diversify into prime lamb production.



Figure 17 Dorper (Source: Geoff Duddy – NSW)



Figure 18 Blackhead Dorper Ram (Source: Yandiah Dorper Stud)

Dual Purpose Breeds

Dohne

The Dohne (pronounced 'doo-nee') Merino is a synthetic dual purpose Merino developed by the South African Department of Agriculture using Peppin-type ewes and German Mutton Merino sires. The breeding program began in 1939 and a Breed Society formed in 1966.

Bred and selected for high fertility, rapid lamb growth rate and fine Merino wool under commercial rangeland conditions, the Dohne has been comprehensively evaluated using performance and progeny testing programs since 1970 and is today one of the leading wool breeds in South Africa.



Figure 19 Dohne Rams (Source: Greg McCann – NSW)

Purebred Characteristics

- A true dual purpose, fine to medium wool breed.
- Ewes highly fertile (lambing percentage 100-150%) with live weights from 55 to 65 kg depending on management and environment.

- Purebred ewes produce from 4-6 kg of high quality 19 to 21 micron wool.
- Exceptional growth rates with purebred lambs reported to achieve 350 g/per/day up to weaning and slaughter weights of up to 50kg live weight reached in 4-6 months.
- Adapted to a wide range of environments, from intensive production systems through to extensive rangeland conditions.
- Plain bodied with reported high resistance to fleece rot and flystrike.
- Wool is free of kemp and coloured fibres.

Introduction into Australia

Frozen South Africa embryos were imported into Western Australia in 1998.

The Dohne offers traditional producers the opportunity to retain or improve their wool production system through improving micron and carcass qualities within Australian Merino flocks.

The Dohne does not pose a clip contamination risk.



Figure 20 Dohne ewes (Source: Greg McCann – NSW)

South African Mutton Merino (SAMM)

Developed from a small imported nucleus of German Mutton Merino and with heavy selection emphasis on wool quality and carcass conformation, the SAMM is a true dual purpose breed, well adapted to all farming regions of South Africa.

The breed's uniqueness was recognised in 1971 when the breed name was changed to the South African Mutton Merino. An Australian 'South African Meat Merino' Breed Society was established in 1997.

SAMM's have contributed to the development of the Dohne, Dormer and Afrino wool breeds in South Africa.



Figure 21 South African Mutton Merino ewe (Source: Bob Chambers – NSW)

Purebred Characteristics

- A polled, woolled breed similar in constitution to the Poll Dorset.
- A true dual purpose breed with a split emphasis (60:40) on meat and wool production.
- Rams and ewes 100-120 kg and 70-80 kg live weight respectively.

- Highly fertile with an average lambing of 150%. Lambing percentages in excess of 250% have been recorded.
- A hardy breed with strong maternal instincts and high milk production enabling lambs to maintain high growth rates to weaning.
- Early maturing with lamb growth rates of 300g/per/day under extensive conditions up to 500g/per/day under intensive feedlot conditions.
- Well muscled, leaner carcasses at heavy trade/export weights.
- Ewes and rams produce on average from 3.4-4.5 kg and 4.5-6.0 kg wool.
- Wool is free of kemp and coloured fibres
- Medium to strong (22-24 micron) wool, overcrimped wool, in comparison to Merino wool of the same strength.

Introduction into Australia

Introduced into most mainland states in 1997 as frozen embryos, ova and semen. SAMM genetics have been sourced from stud and commercial South African properties. Embryos (imported and local), ova, recipient ewes and semen are currently available.

Structurally similar to the Poll Dorset, the SAMM offers traditional producers the opportunity to retain wool production while also improving carcase qualities.

The SAMM does not pose a clip contamination risk.

Fleece weights may be reduced compared to traditional purebred merino production systems.

The SAMM has been used extensively Australia wide as a terminal sire and as a replacement for traditional first cross ewe sires such as the Border Leicester. SAMM/Merino cross carcasses have proven to be acceptable at both domestic and export weight classes, with reduced fat deposition and good hindquarter development.



Figure 22 South African Mutton Merino ewes (Source: Bert Matthews – NSW)

Marketing

There has been a high degree of interest shown in the new breeds within the pastoral regions of Australia. Drawn by the perceived advantages of disease resistance, reduced these breeds as management input and costs, many producers see these breeds as a means of supplementing, replacing or improving traditional wool enterprise returns.

Many producers have initiated breeding programs within traditional wool regions to supply the live sheep and domestic carcase markets or have sought to improve wool and carcase quality through the dual purpose breeds outlined earlier. Consistency of supply, alliance development and product quality assurances are areas that must now be addressed to ensure markets domestically and abroad are to be further developed and serviced.

Live Sheep

The first recorded export of live sheep from Australia occurred in 1845. By 1895 an estimated 1,000 sheep were exported annually to Singapore in modified container vessels.

The modern live sheep trade began in 1945/46 with shipment of more than 24,000 sheep to Singapore in temporarily converted vessels. Although the live sheep trade with Middle Eastern countries began in the 1950s with ad hoc shipments on demand since the mid 1970s this sector has grown rapidly with an increasing emphasis placed upon product quality and market specifications.

The live sheep trade has grown significantly during the past decade as shown in the graph below. Increasing demand and improved returns for producers has led to an increased interest in the trade and the importation of the many fat-tail breeds mentioned earlier. These breeds should ensure an increased commitment among producers and customers with additional growth within the key markets supplied.

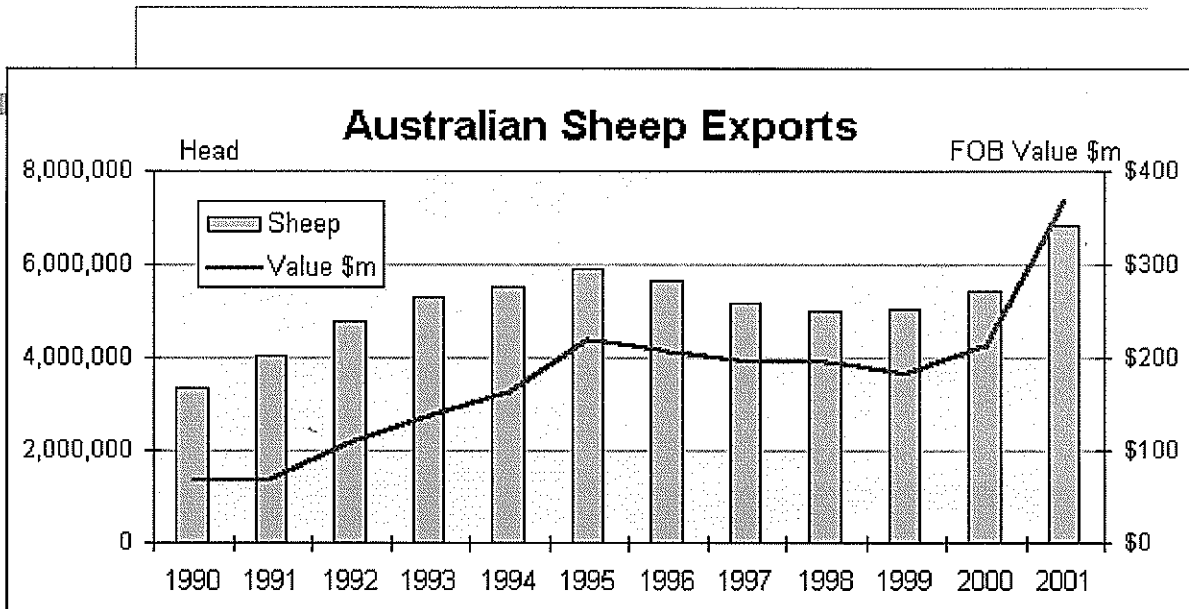


Figure 23 (Source: LiveCorp 2002)

The live sheep trade as we know it today focuses on Middle Eastern market supply with an increasing emphasis on product quality and market specifications. The Middle East currently imports an estimated 15-16 million sheep annually, of which 7-8 million are fat-tails. From 90 to 99%, depending on time of year, of Australia's live sheep exports are destined for this market.

A highly regulated and professional industry Australia has numerous domestic and international live sheep export companies regularly servicing world markets. Purpose built vessels such as the recently commissioned, *Rodolfo Mata*, capable of carrying 135,000 sheep, have reduced transport time, improved trade relations and reduced welfare agency concerns.

Western Australia has traditionally supplied the majority of live sheep to Middle Eastern markets. A greater number of live sheep ports, proximity to the major trading partners and a greater focus on market requirements by producers within the state compared to eastern state producers has seen the state supply from 65 to 85% of live sheep traded nationally.

The re-entry of Saudi Arabia into the live sheep market trade and reduced competition from traditional competitors (eg North Africa due to disease concerns) has seen a greater number of vessels sourcing suitable stock from eastern Australia, despite additional costs of between \$7-10 per head for carriers.

Despite the increase in live sheep export demand in recent years, producers across Australia are encouraged to fully investigate breed suitability, management requirements and changes, and the profitability of servicing the live sheep trade before committing to a change in breeding objectives.

Producers should consider the following:

- The location of their nearest live sheep export port. Transport costs of between \$5-\$15 per head (depending on number and distance to port) may negate the production cost savings many of the minimal management fat-tail breeds offer.
- Market requirements such as preferred breeds, weights and fat scores. An example of various market requirements is included in Appendix A.
- Aim to supply when prices are high, eg before the peak demand of Ramadan and Haj religious festival in the Middle East. A calendar of major religious festival times is included in Appendix B
- Providing a product that meets quality assurance requirements. For example, this may involve the production of disease free (eg scabby mouth), entire male lambs and/or hoggets.
- The development of supply and marketing alliances/cooperatives to coordinate supply, particularly to the higher value markets currently available.
- Precondition lambs/hoggets for feedlot rations.

Carcase Markets

The introduction of many of the new breeds listed in this publication has provided an opportunity for many traditional wool producers within the marginal pastoral regions of Australia to diversify and service both traditional and developing sheepmeat markets domestically and abroad.

Breeds such as the Dorper, Dohne and SAMM offer greater market opportunities through increased lamb production, the opportunity to produce prime lamb in marginal areas and the ability to service traditional sheep meat markets while retaining the wool enterprise. Fat tail breeds are also able to service established domestic and export markets if carcasses are sold with the characteristic tail removed. Unfortunately this would negate many of the benefits such breeds offer Australia in terms of servicing a growing world population, many of which have historically bred and/or used fat-tail breeds.

Below are markets in which both domestic and export carcass development potential exists.

Halal Specifications

An opportunity exists for Australia to produce value added processed meats for Muslim consumers domestically and abroad.

Muslims food must conform to Islamic principles. 'Halal' (meaning permitted or lawful) foods must meet certain criteria, including a defined method of slaughter of the sheep/lamb. Processed meat products and animal based

ingredients such as gelatin, casings, fats, calcium and flavour carriers or enhancers derived from halal animals may also be used.

Most export processors are able to meet ritual Islamic halal slaughter requirements. Processed product, in carcase or packaged form, may then be exported if labelling, documentation and handling/storage requirements for the country importing the product are met. Bilingual labels (Arabic and English), Islamic Slaughter Certification expiration dates are required by most Middle Eastern countries.

Few domestic processors are currently registered halal abattoirs. While this may initially be a disadvantage, domestic markets may not stipulate strict halal slaughter specifications unlike most export markets. The potential exists however to form alliances between producers, processors and wholesale/retail outlets to supply halal certified meats and offal.

Kosher Specifications

Kashrut (Jewish) dietary laws specify that only kosher animals may be consumed. Kosher animals include ruminants with split hooves, most common fowl and most species of fish. Such must be slaughtered according to specified slaughter requirements similar in many ways to halal slaughter procedures.

There are established domestic and export markets for kosher sheep/lamb meat and offal. These and additional markets can be developed if Australian producers adhere to slaughter specifications and can consistently supply a quality assured product.

Organic Lamb Production

Interest in and the development of organic farming practices and production has grown significantly over the last decade. Increasingly health conscious consumers have fuelled the industries growth despite products commanding from 10 to 45% more than traditionally produced products.

Organic meat products must adhere to a legally defined standard where the routine use of traditional chemicals (drugs, drenches, growth promotants, antibiotics, feed additives), artificial fertilizers or pesticides is prohibited. Accreditation / certification as an organic producer with industry bodies such as the National Association for Sustainable Agriculture of Australia (NASAA) is necessary to be able to market products.

While demand for organic products is still relatively small, there is a growing number of certified organic producers nationally. Global markets for organic commodities are growing rapidly and major trading opportunities are available,

particularly in Asia, provided quality assurance and supply programs are addressed.

Although yet to be proven under Australian conditions, claims that many of the new breeds have a high natural resistance to internal and external parasites (and chemical use is therefore minimal or unnecessary) supports the use of exotic breeds in the production of meat.

Export Market Development

Most export processors are able to meet ritual Islamic Halal slaughter requirements. Processed product, in carcase or packaged form, may then be exported if labelling, documentation and handling/storage requirements for the country importing the product are met.

Middle East

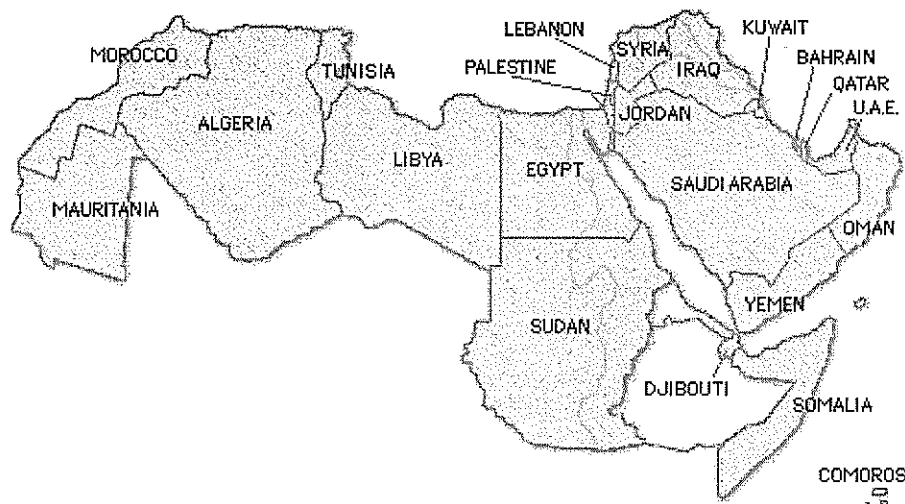


Figure 24

Generally an arid region with limited land available for agricultural production, the Middle East offers immense potential for Agri-food exporters. The population is characterised as young, with a high disposable income and well educated who are willing to accept western culture and products. The Middle Eastern countries have specific and often complex regulations relating to the following:

- Labelling (Bilingual labels with Arabic and English are recommended)
- Islamic Slaughter Certification.
- Expiration dates.
- Pricing policies.

Market research is critical for the development of long-term contracts particularly as cooperating countries are generally price and quality sensitive.

Asia / South East Asia

Given the volatility of Middle Eastern markets and the unpredictability of live sheep carriers, the development of niche carcass markets, within the rapidly growing Asian food markets, is strongly recommended.

Low and declining local production, improved market access, growing demand for healthy, prepared or semi-prepared foods and a strong Muslim base in most Asian countries offers the Australian producer an opportunity to supply Halal prepared sheep/lamb carcasses and/or offals or value added forms.

Meat exports to Asian countries has grown significantly since 1991-92, representing between 47% and 64% of total red meat exports from Australia. There is the very real possibility that the sheep/lamb share of total meat exports will increase within the next decade.

We must fully appreciate and cater for an increasing awareness of food safety issues, specific quality expectations, cultural and religious requirements and adhere to regulations governing supply within Asia if long term supply contracts are to develop.

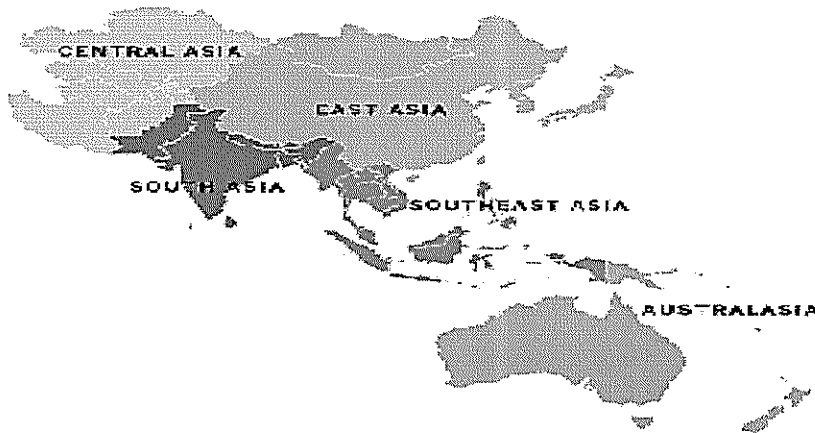



Figure 25

Domestic Market Development

Most major cities have Muslim populations that are interested in obtaining traditional meats and opportunities for domestic carcass sales are strong. Indeed there appears to be a strong ethnic domestic market within all mainland states for many of the fat-tail breeds listed.

Industry must immediately identify and implement production and processing quality assurance programs if domestic markets are to develop. Year round



supply availability during peak demand periods and the development and implementation of quality assurance programs from on-farm production to retail sale are essential if the customer base is to be retained or expanded. Producer based cooperatives or alliances will therefore be an important factor in the success of domestic market sales.

Breeding stock

Our relatively disease free status and quarantine requirements provide Australian producers with the opportunity to supply breeding stock, embryos and semen for overseas breeding programs. Adherence to strict quarantine and export protocols is essential for the development of such programs.

Clip Contamination Concerns and Findings

Concerns have been expressed by primary producers and wool industry bodies nationally over the potential for many of the new breeds to increase the level of contamination in the Australian wool clip.

Dark fibre and kemp/medullated fibre contamination are serious faults that cannot be measured in greasy wool pre-sale. Clip preparation, flock and whole farm management practices must therefore include quality assurance policies that minimise or prevent the transfer of pigmented fibres from coloured or partly coloured animals; those with a high proportion of medullated fibres and those with a natural fleece shedding tendency.

Comprehensive field, pen and processing trials were conducted by the Western Australian Department of Agriculture to determine the potential for clip contamination from the Awassi prior to release from quarantine in 1993. Many of the management recommendations listed within this chapter were generated from this research, however additional research is necessary to determine if the management practices recommended are effective in minimising clip contaminants for many of the newer breeds since release.

1. Pigmented Fibres.

Pigmented fibres are responsible for approximately 16% of all wool contaminants, are seldom identified in greasy wool (with the "fault" first recognised in late stage processing) and are usually black or varying shades of brown.

There is evidence of transfer of pigmented fibres from coloured or partly coloured animals to white sheep. The degree of transfer varies between breeds and circumstances, with greatest fibre contamination within the rump area immediately following mating and lambing due to shedding of contaminant fibres with time.

2. Kemp/Medullated Fibres

Medullated fibres (hollow or partially filled central core) are usually present in varying degrees in the fleece of all sheep. They are common around the head, breech and leg areas.

Some medullated fibres have a chalky white appearance and are often referred to as 'kemp'. Kemp fibres are generally short, stiff fibres that are either ejected or broken down and lost during the early stages of wool processing. If not removed during processing, kemp may show up prominently in dark coloured fabrics.

The Western Australian trials indicate that kemp fibres dominate the counts of contaminant fibres found within Merino ewes mated to the Awassi, or suckling Awassi cross lambs. As the Awassi's carpet wool fleece consists of an outer hairy coat and inner wool coat, as have many of the breeds listed in this paper, it may well be safe to assume that management recommendations and practices developed prior to the release of the WA Awassi in 1993 may be of benefit to those producing new breed crosses over the Merino or equivalent. Additional research is however necessary to determine the degree of clip contamination by new breeds, and practices to minimise and/or prevent it.

Management Recommendations

Quality Assurance systems generally require that coloured or partly coloured sheep are separated from a white wool flock so as to avoid contamination and the use of a 'Y' suffix to denote sale lots which carry the risk of pigmented fibre contamination.

General recommendations:

- If possible, isolate coloured and kemp/hair breeds and crosses from white wool breeds.
- Shear/crutch (if necessary) crossbred ewes, progeny and sires in a separate facility or after white wool breeds are shorn.
- Remove sires from ewes a minimum of eight weeks prior to shearing/crutching.
- Wean crossbred lambs a minimum of four weeks prior to shearing/crutching ewes.
- Adhere to QA Shed Protocols (eg ClipCare)

Note: MLA will shortly release a strategic review of the role of exotic sheep breeds in the Australian sheep industry.

Appendix A

Country	Weight	Breed	Age	Sex
Middle East	50 – 60 kg	Wethers	Up to full mouth	Castrated males
	34 – 37 kg	Merino lambs	Lambs	Castrated males
	34 – 37 kg	XB lambs	Lambs	Castrated males
	55 – 65 kg	Rams	Up to full mouth	Males
	36 – 40 kg	Damara F1 ram lambs	Lambs	Males
Saudi Arabia	36 – 38 kg	Any ram lamb with tail	Lambs tooth	Males
	42 – 45 kg	Ram hoggets/with tail	Max 2 tooth	Males
	48 – 50 kg	Rams	Up to 4 tooth	Males
	35 – 40 kg	Damara fat-tail	Up to 4 tooth	Males
	50 - 60 kg	Wethers	Up to 6 tooth	Castrated males

Health protocol requires Scabby Mouth vaccination program to Saudi Arabia.

Kuwait	52 – 62 kg	Wethers	Up to full mouth	Castrated males
	44 – 50 kg	Young wethers	2,4,6 tooth	Castrated males
Jordan	45 – 52 kg	Wethers	Up to 4 tooth	Castrated males Sheep
Egypt	50 - 55 kg	Merino wethers	Lambs - Up to 4 tooth	Castrated males

Figure 26 Source: Elders website – http://www.livestock.elders.com.au/live_exports.asp

Appendix B

Holiday Calendar for Lamb and Goat Marketing					
Holiday	2001	2002	2003	2004	2005
Eid al Adha	March 6	February 23	February 12	February 2	January 21
Islamic New Year	March 26	March 15	February 22	February 10	January 31
Start of Passover	April 8	March 28	April 17	April 6	April 24
Christian Easter	April 15	March 31	April 20	March 27	April 16
Orthodox Easter	April 15	May 5	April 27	April 11	May 1
Start of Rosh Hashanah	September 18	September 7	September 27	September 16	October 4
Ramadan Begins	November 17	November 6	October 27	October 15	October 4
Eid al Fitr Ramadan Ends	December 17	December 6	November 26	November 14	November 3
Start of Hanukkah	December 10	November 30	December 20	December 9	December 26
Christmas	December 25	December 25	December 25	December 25	December 25

Appendix C

Industry Contacts

General (all breeds)

Geoff Duddy
NSW Agriculture,
Yanco, NSW 2703
(02) 6951 2688
geoff.duddy@agric.nsw.gov.au

Matthew Young
Agriculture Western Australia
(08) 9956 8506
myoung@agric.wa.gov.au

Afrikaner

Bronte & Di Gardner
RMB 609
Kojunup W.A. 6395
(08) 9832 8035

Denis Russell
GENELINK
PO Box 125 Keith, SA
(08) 8756 7039
genelink@lm.net.au

Awassi

Graham Daws
'Emanuel Exports'
West Perth WA 6872
(08) 9322 6401

Phillip Grant
79 Macquarie St,
Cowra NSW 2794
(02) 6342 6065

Damara

Australian Damara Breeders Association
Greg Scott
14 Kincora Place
Wagga Wagga NSW
(02) 6926 5489
eadc@bigpond.com

John Hall
PO Box 18
Narenbeen WA 6369
info@halldomain.com.au

Dohne

Macquarie Artificial Breeders
Lot 741 Macquarie St,
Dubbo NSW 2830
(02) 6884 3204
dubbovet@bigpond.com

Graham and Sally Coddington
'Glenwood'
3 Obley Rd
Dubbo NSW 2830
rosevillepark@ozemail.com.au

Geoff & Helen Beeck
PO Box 186
Katanning WA 6317
(08) 9821 4333

Alex & Lyn Leach
PO Box 70
Katanning WA 6317
(08) 9821 1597

Dorper

Dorper Sheep Breeder's Society of Australia Inc

(National) Bronte Gardner
RMB 609
Kojunup, WA 6395
(08) 9832 8004

(Eastern Region) Ivan Wilks
'Murrisk'
103 Illawara Hwy
Sutton Forest NSW 2755
(02) 9387 2888
iwilks@fl.net.au

(Central Region) Angus McTaggart
PB 18
Pt Augusta SA 5710
(08) 8648 1814

(Western Region) Lance Ludgate
PO Box 218
York WA 6302
(08) 9641 7012
ludgate@avon.net.au

Karakul

Peter Lang
Fares Rural Co Pty Ltd
PO Box 464
Fremantle WA 6959
(08) 9335 4444
FaresRural@faresgroup.com

SAMM

Prime SAMM Breed Society

(National) Wendy Russell
PO Box 7
Broome Hill WA 6318
(08) 9824 1204
clifden@bigpond.com

Grant Picker
"Hillcreston"
Bigga NSW 2583
(02) 4835 2283

(Eastern Branch) Bob Chambers
Hurstmead Pastoral Company,
'Brooklyn' RMB 523 Wagga Wagga 2650
(02) 6928 1123
hurstmead@bigpond.com

Van Rooy

Denis Russell
GENELINK
PO Box 125
Keith, SA
(08) 8756 7039
genelink@lm.net.au

Additional Contacts

LiveCorp Suite 601 Currency House
23 Hunter St
Sydney NSW 2000
<http://www.livecorp.com.au>

MLA (natch)

SheepMeat Council of Australia PO Box E10
Kingston NSW 2604
(02) 6273 3088
sca@sheepmeatcouncil.com.au

<http://www.farmwide.com.au/nff/sheepmeat/secretariat.htm>

AUS-MEAT 9 Buchanan St
South Brisbane Qld 4101
(07) 3247 7200 (bh)
<http://www.ausmeat.com.au>

AusIndustry
<http://www.ausindustry.gov.au>
Hotline 132846

LambPlan Department of Animal Science
University of New England
Armidale NSW 2351
(02) 6773 2948
<http://lambplan.une.edu.au>

AusTrade
GPO Box 5301
Sydney NSW 2001
(02) 9390 2777
managing_director@austrade.gov.au
<http://www2.austrade.gov.au>