AWTA LTD INFORMATION SHEETS
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EXOTIC SHEEP BREEDS IN AUSTRALIA

- A STATUS REPORT

Introduction

This report summarises the current status of concerns with regard to contamination of the merino clip from coloured and/or medullated fibres from imported exotic sheep and their crosses with merino ewes. It draws on published information from a number of sources.

The Sheep

Awassi

This is a fat tail sheep from the Middle East, imported into WA in the mid-1980s. Its wool is carpet type approx 30um, 69% wool, 24% hair, and 7% kemp. Fleece colour varies from brown to white

It is estimated there are 400,000 Awassi/Merino cross ewes in WA

Australian Total: 400,000

Damara

This breed began being imported from South Africa in the1990s, again initially into WA. It is a fat tail sheep with high fertility. It sheds its fleece, which can be of different colours (tan, brown, black and white spotted). The fleece consists of hair with a fine layer of wool.

It is estimated there are 7,000 pure Damara in WA, 2,000 in SA, 500 in NSW and 800 in Qld.

It is estimated there are 100,000 Damara/Merino cross ewes in WA, 70,000 in SA, 30,000 in NSW and 24,000 in Qld

Australian Total: 234,300

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DEPUTY MANAGING DIRECTOR
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Last updated by Peter Sommerville, 12th February 2001

Karakul

This sheep has multi purpose, pelt, fleece and meat. It has a long lustrous fleece, usually black but can be red, brown and white.

It is estimated there are 260,000 Karakul/Merino ewes in WA.

Australian Total: 260,000

Dorper

The Dorper is a South African mutton breed with high lambing percentage. Its fleece is wool and hair which is shed if not shorn regularly. It mostly has a black head. Its pelt is most sought after.

It is estimated there are 1,500 pure Dorper in WA.

It is estimated there are 10,000 Dorper/Merino crosses in WA, 5,000 in NSW.

Australian Total: 16,500

Conclusion

From estimates provided by state Departments of Agriculture, there are close to 1 million sheep that can have, or pass on, dark fibre or medullated fibre contamination.

Contamination Risk

Evidence from South Africa, WA and SA show that Merino ewes can be contaminated with coloured and/or medullated fibres during mating with these breeds, but more particularly when the crossbred lamb, growing coloured and/or medullated fibres is suckling its mother. It has been speculated that leaving a sufficient period between weaning of lambs and shearing of the Merino ewes could reduce the level of contaminant fibres to acceptable levels, but there is evidence also to show that this is not clear-cut.

Contamination in mixed flocks could occur from close contact of the 2 breeds in yards, races or pens.

At present, dark and medullated fibre contaminants are not measured prior to sale of the wool. Instead, reliance is placed on sheep breeding and management, clip preparation and wool marketing to assure low dark and medullated fibre risks or identify affected sale lots. Several examples of this are currently in place. In WA, the industry is asking growers to sign a declaration stating that the merino sheep from which a particular consignment was shorn have not had contact with exotic breeds. If no declaration is provided, the wool is suspected of potential contamination and the lots are sold in a separate tender catalogue. Nationally, the AWEX Code of Practice identifies a risk rating

of 1 to 5 for sheep with contamination potential. Merino is 1 whilst the exotics are 5 and traditional coloured breeds, eg Suffolk, Southdown, Dorset are 3-4. The revised Wool Classer's specification has a section for nominating dark fibre risk and commenting where necessary. Wool Classers are required to stencil the suffix Y after the description on bales where they expect exotic sheep fibre contamination. The role of the woolclasser in handling wool where it is known that exotic breeds have been associated is a component of the Wool Classing Development Course now being conducted throughout Australia.

In South Africa, the biggest broker, BKB, has a distinguished brand "Fibre Care" where farmers guarantee that their clip is free from exotic sheep fibre contamination. Similarly, the National Wool Growers' Association, NWGA, has their own emblem "CCC" (Cape Clean Wool) with the same goals. The Wool Testing Bureau visually inspects Shirley Analysed webs for obvious contamination.

Identifying Contamination by Measurement

Until now most dark fibre contamination has been considered a discrete sampling problem, i.e. staples of stained or pigmented wool appear in a lot of wool but are not randomly dispersed through the wool. However, the contamination from exotic breeds is different. Each ewe fleece will have some contaminated fibres if mated or rearing a lamb from an exotic ram. Consequently, the core sample may be representative of the degree of contamination. Assuming this is so, what tests can be conducted?

Coefficient of Variation Differences

Preliminary observations from tests conducted in WA indicate that CVD may be useful for some breeds. Wesfarmers Dalgety have provided clip data to enable AWTA Ltd to identify possible trends. These are reported below;

Group	**Mean Fibre Diameter**		**Coefficient of Variation**	
	Mean (micron)	**Range (micron)**	**Mean (%)**	**Range (%)**
19 lots Awassi	27.4	25.2 – 29.9	30%	24 – 34%
22 lots Awassi	27.3	24.4 – 29.7	32%	24 – 39%
11 lots Awassi/Merino	22.3	20.4 – 24.3	21.4%	20 – 23%
2 lots Damara	20.5	20.1 – 20.9	35%	32 – 38%
2 lots Damara/Merino	25.3	24.8 – 25.7	21%	21 – 21%
10 lots Trad XB	28.2	26.0 – 30.6	24%	22 – 26%
11 lots Trad Merino	22.3	20.4 – 24.3	22%	20 – 25%

This data shows that pure Awassi and Damara could be identified by a high CVD and this could be used to alert the broker to check the display sample. However, these pure breeds should be exhibiting enough colour to be obvious at time of sampling or when displayed. Compared to traditional XB or Merino lots, there is no distinguishing feature in the results to identify Awassi or Damara crosses. Even the percentage of fibres over 45 um doesn't help identification.

Ultra-violet Light

This has been tested on a web of fibres and found to be ineffective to detect either pigmented or medullated fibres.

Ortho-dichlorobenzene

This traditional technique is used to identify the presence of medullated fibres. It relies on the chemical having a similar refractive index to wool. It is not a quantitative test.

CSIRO Dark Fibre Detector

This has been tested on a web of fibres and found to be able to identify dark fibres. However, the process is manual, slow and unreliable.

OFDA

This is able to measure medullation. Its ability to identify a coloured fibre is not known.

Optalyser

This instrument, developed by Centexbel, can measure coloured fibres, VM specs and neps in combed sliver. Its application to raw wool is unknown. The machine is expensive and would probably require a raw wool sample to be prepared into a sliver for measurement.

Conclusion

It is clear from the above that there is no easy solution to the detection or measurement of dark and/or medullated fibres. While AWTA Ltd is examining these alternatives, some review of modern image and colour measurement technology may be a useful step forward. However, we see no quick fix.

Meanwhile, the industry must address the issue via the management and classing practices being put in place in conjunction with Classer and Grower declarations.

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FURTHER INFORMATION

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