

## DARK & MEDULLATED FIBRE TESTING

### - The Facts about Testing

#### BACKGROUND

Australia's wool has an enviable reputation for its low level of contamination by 'objectionable fibres' compared with wool produced by other countries. This is a reflection of the efforts by our wool growers and wool classers to minimise contamination by appropriate animal husbandry and management techniques.

Dark fibres may be either naturally pigmented fibres (black fibres) or fibres stained by urine. Pigmented fibres will always likely occur in some sheep, no matter how well bred, because the genes that produce them cannot be totally eliminated by traditional breeding techniques. Pigmented fibres in wool may occur through contamination from coloured sheep running within a white mob or by poor shed hygiene.

Historically, urine stain has been seen as the most significant source of coloured fibres in Australian wool. Urine stained fibres almost always occur because of unsatisfactory crutching or the failure to crutch at all.

In merino sheep, medullated or kemp fibres can occur on their legs, or in response to nutritional changes due to environmental factors.

The Code of Practice for wool classers includes guidelines for minimising the risk of contamination from pigmented and medullated fibres.



*Two technicians visually examine four specimens, each of 5 grams, of washed and carded core sample using the Dark Fibre Detector to identify the dark and medullated fibres present. These samples are inside a sealed plastic bag, from which the air has been excluded, where they are immersed in a solvent with the same refractive index as wool. The white wool fibres become transparent but under certain lighting conditions the dark and medullated fibres become visible and can be counted.*

Spinners or weavers may specify levels of around 10-20 pigmented fibres per 100 grams of wool top (even less for some uses) before discounts (or claims) apply. In the original greasy wool this corresponds to as few as 3-4 staples of stained or coloured fibres per bale. Given that the sources of coloured fibres are normally patchy, it is difficult if not impossible to provide a reliable test of sale lots of greasy wool for such low levels of contamination. The major difficulty is obtaining an appropriate sample.

In the early 1980's CSIRO developed an instrument, the **Dark Fibre Detector**, which can be used for routinely monitoring levels of dark fibre contamination in wool tops. In principle this instrument can and has been used for examination of scoured and carded samples of greasy wool, but the sampling difficulties preclude its routine use for wide-scale testing for contamination from pigmented fibres.

## CONTAMINATION FROM EXOTIC SHEEP BREEDS – A SPECIAL CASE

However, in recent years the introduction of exotic sheep breeds such as Damara, Awassi and Dorper has introduced a potential new source of contamination. We now know that 'objectionable' fibres from these breeds can be transferred into merino wool via three mechanisms:

- contact of merino ewes with the exotic rams during mating;
- contact of the ewes with their offspring following such matings; and
- penning coloured sheep and white sheep together close to shearing.



*Contact between merino-damara crossbred lambs and their mothers has been shown to contaminate wool produced by the ewes.*

In this special case we know that any contamination that does occur is spread over the fleeces of the ewes. Unlike pigmented fibre and urine stained fibre it is not clumped in patches within the fleece. **This means that the sampling problem is very much reduced and it is possible to detect the contamination by examining the core sample taken from sale lots assembled from the wool shorn from the ewes.**

### AWTA Ltd DARK FIBRE TESTING SERVICE

The Dark Fibre Testing service offered by AWTA Ltd is **targeted at growers who are attempting to manage contamination from exotic sheep breeds, or who wish to monitor the contamination in lots carrying a high risk of contamination. It is not a catch-all test.** When it was originally introduced in March 2003 it was labour intensive and slow, and therefore expensive (\$150 per test). However, during the second half of 2003/04, an improved test was developed, based on research by CSIRO, funded by AWI, which dramatically reduced the cost (\$39.70 per test).

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Test Result	Fibre Count
LOW	0 - 10 fibres (per 10 grams)
MEDIUM	11 - 20 fibres (per 10 grams)
HIGH	>20 fibres (per 10 grams)

A similar convention will be used for reporting medullated fibres.

**Growers wishing to utilise the service must request it through their wool selling broker or wool selling agent before their lots are sampled for certification for Yield, Vegetable Matter Base and Mean Fibre Diameter.**

### FURTHER INFORMATION

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