

Minnipa's Damara sheep project

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Background

The wool declines of the 1990's stimulated interests in diversification including "fleece shedding" sheep breeds with potential for low maintenance costs. Following a government review, Damara and Dorper embryos were imported from South Africa to Australia in 1996. The limited supply and high cost of these purebred "exotic" sheep meant that the new sheep genetics was usually introduced by crossbreeding with Merino ewes. Such crossbreeding practices caused wool industry concerns and debate with the breed promoters about the extent and persistence of contamination arising. There was a lack of specific information and inadequate interpretation of the limited available information for other breeds.

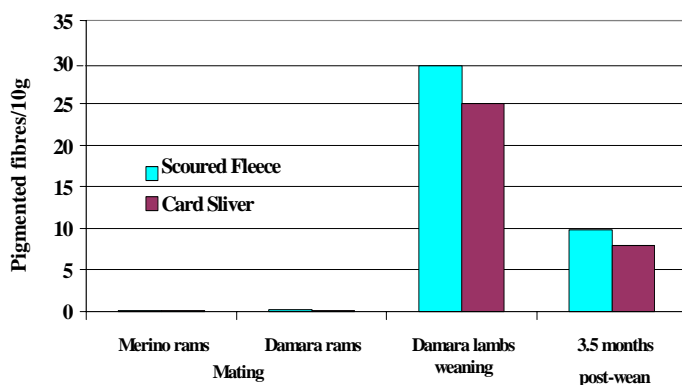
SARDI interests at Minnipa Agriculture Centre to develop a new sheep project, combined with those at Turretfield Research Centre, and other PIRSA support including the Wool and Fibre Industry Development Board, allowed the initiation of the state funded project in April, 1999. The aim was to obtain factual information in relation to crossbreeding of Damara fat tail rams with Merino ewes regarding the wool contamination issues and productivity.

Following SARDI's initiative, commercial consignments of Merino wool exposed to Damara crossbred lambs began appearing in the market without specific identification and this concerned processors. Michell Pty Ltd made some preliminary evaluations on 3 such lots and involved SARDI in assessing core sample wool from the bales. Wools from Minnipa's Merino ewes were then being assessed thoroughly - after mating with 2 Merino or 2 Damara rams and after weaning or 3.5-months post-weaning of the Damara crossbred lambs. The Minnipa trial contributed important new information, assisting revisions to the national standards for woolclassing and describing of affected wool lots for marketing, and stimulating new industry developments and research initiatives. However, gaps of information remain for the many sire breeds now mated to Merinos, together with questions about fibre persistence in processing, and these continue to raise uncertainty about relative rankings for risk assessment.

Wool Contamination – main findings

- Mating – No significant effect of mating Merino ewes to the Damara rams in this case.
- Rearing – High levels of contaminant fibres transferred from the crossbred lambs to the Merino ewe fleeces.
- Post-weaning – Despite a decline in the number of contaminant fibres relatively high levels persisted in the Merino ewe fleeces at 3.5 months after weaning.
- Merino lambs run together with the crossbred lambs had wool from skins that also contained high numbers of contaminant fibres.
- The crossbred lambs produced half the amount of wool, compared to the Merino lambs, which was mainly coloured, highly medullated and of low value.

Figure 1: Transfer of pigmented fibres (with lengths > 10mm) from Damara rams or crossbred lambs to Merino ewes



Above: Damara crossbred lambs and Merino ewes

References

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Lamb Production – main findings

- Merino ewes mated to the 2 Damara rams produced more pregnancies with multiple lambs.
- The Damara crossbred lambs grew faster than the Merino lambs.
- Ram lamb carcasses of both lamb types produced similar amounts of lean meat for the same carcass weight. However, the Damara crossbred lamb carcasses carried more fat.



Left to right:

- Ram lambs – Damara x Merino either side of a Merino
- Damara x Merino carcasses
- Merino carcass
- Boning of carcass at the Regency Institute of TAFE

References

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Pigment Genes

- One of the Damara rams produced equal proportions of black v. white or tan lambs indicating he was a carrier of the gene responsible for Dominant Black. Norwegian researchers had just characterised the DNA changes causing this effect in the Dala breed. Collaboration between SARDI and the Agricultural University of Norway showed that the same DNA changes in the Damara breed caused Dominant Black and using the Minnipa family the gene (*Extension*) was mapped to chromosome 14.
- The other Damara ram produced a single black lamb with the badgerface pattern that is a recessive effect determined by an independent gene (*Agouti*) that SARDI previously helped locate to chromosome 13. The DNA changes causing recessive black lambs are a continuing problem for the breeders of white sheep as there is no specific diagnostics available. Members of this family have been retained to form a resource flock at Turretfield Research Centre for other research in progress aimed at characterising the DNA changes involved.

References

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Industry Initiatives

- Following the SARDI and Michell Pty. Ltd trials, the Australian Wool Testing Authority (AWTA Ltd) undertook with SARDI a study of the feasibility of measuring core sample wool to detect “exotic” sheep fibre contaminants in commercial sale lots. AWTA Ltd (www.awta.com.au) has since offered a commercial testing service.
- The Australian Wool Exchange Ltd. revised the Code of Practice for preparation of Australian woolclips including guidance and specific bale descriptions to identify Merino wool likely to be contaminated by high levels of objectionable sheep fibres. In conjunction with this new document the national Woolclasser Development Program included a section on the risks and description of wools with such contamination.
- Australian Wool Innovation Ltd initiated a research program to develop a more suitable presale testing system and through the Federation of Australian Wool Organisations introduced a vendor declaration and risk assessment system for wool marketing.

References

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