

# ANIMAL PRODUCTION IN AUSTRALIA VOLUME 30



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Harnessing the Ecology and Physiology of Herbivores

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National Convention Centre

Canberra, Australia



**Proceedings of the 30th Biennial  
Conference of the Australian  
Society of Animal Production**

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# **ANIMAL PRODUCTION IN AUSTRALIA**

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Volume 30

*Harnessing the Ecology and Physiology of Herbivores*

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## Sex Effects on Lamb Wool Quality under Pasture and Lucerne Hay Basal Diets

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Wool quality traits are routinely used for price discrimination. This has prompted many selection and nutritional management tools to be tailored towards best exploiting these traits for better profitability. Within Australia, the wool industry is spread across regions prone to seasonal change, and analysis of pasture-fed and Lucerne hay basal diets can provide a summation of this variation. The effect of sex and basal diet on wool quality traits is the objective of this research.

Experimental lambs used were concurrently studied with a 9 week feeding trial detailed by Holman (2013), and an overview of research methodology follows. Over 2 years, a total of 48 lambs were allocated to either ryegrass pasture (Year 1; n = 24) or Lucerne hay (Year 2; n = 24) basal diets as balanced by sex (ewes, wethers). All lambs were run on these basal diets together with midside wool sampled at the commencement and conclusion of the feeding trial. Wool samples were commercially analysed (AWTA, VIC) and raw data was transformed to express change in wool quality trait over the feeding trial. This was fitted into a factorial ANOVA model in 'Statistical Analysis System, Version 9.1' software to identify significant effects.

**Table 1. Sex effects on lamb wool quality change ( $\Delta$ ) least square means (LSM) and standard error (SE) under pasture and Lucerne hay basal diets**

Wool Quality Trait <sup>1</sup>	Units	Ewe				Wether			
		Pasture		Lucerne Hay		Pasture		Lucerne Hay	
		LSM	SE	LSM	SE	LSM	SE	LSM	SE
$\Delta$ FD	$\mu\text{m}$	1.23	1.13	0.93	0.24	-0.03	0.72	0.23	0.50
$\Delta$ CV	%	1.20	1.26	-0.29	0.40	0.32	0.79	0.08	0.60
$\Delta$ SD	-	0.53	0.25	0.13	0.09	0.08	0.24	0.04	0.14
$\Delta$ CF	%	-5.98	4.13	-2.73	1.01	-2.98	2.69	-3.66	1.16
$\Delta$ SF	$\mu\text{m}$	1.45	0.94	0.85	0.24	1.03	0.64	0.24	0.46
$\Delta$ CURV	$^{\circ}/\text{mm}$	-3.75	1.79	-3.00	1.74	-4.17	2.79	-2.58	3.92
$\Delta$ CFW	%	-2.63	0.68	3.05	0.94	-6.16	1.29	2.70	0.94

<sup>1</sup>Mean fibre diameter (FD), fibre diameter coefficient of variation (CV), fibre diameter standard deviation (SD), comfort factor (CF), spinning fineness (SF), fibre curvature (CV), clean fleece yield (CFW)

Ewe lambs' wool quality traits under Lucerne hay tended to change lesser over the feeding trial than those under pasture-fed basal diets. However, no significant change was observed ( $P>0.05$ ). This is thought to stem from the relative brevity between commencing and concluding wool sampling which limited the effectiveness of any sex and basal diet interaction on wool quality trait change. The sample size is also thought to have contributed to the observed variation (SE) and highlights a need for more experimental work.

We can conclude that lamb wool quality under pasture-fed or Lucerne hay basal diets is unaffected by sex over a 9 week period.

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