Sheep CRC Conference Proceedings

Document ID:	SheepCRC_22A_21
Title:	Towards prediction of staple strength: Variability of key staple profile parameters
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Key words:	wool; staple strength; prediction

This paper was presented at the Sheep CRC Conference 'Wool Meets Meat' held in Orange, NSW in 2006. The paper should be cited as:

Geenty, KG.; Smith, A.J.; Anderson, M.V. (2006) *Towards prediction of staple strength: Variability of key staple profile parameters* in 'Wool Meets Meat' (Editors P. Cronje, D. Maxwell) Sheep CRC pp 253

Towards prediction of staple strength: Variability of key staple profile parameters

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The OFDA2000 technology has the potential to assist wool producers by providing an objective characterisation of fibre diameter changes throughout the year. It has also been suggested that staple profile information can be used in the prediction of Staple Strength.

A survey of people experienced in the measurement and use of staple profiles, and a subsequent Fibre Profile Workshop (Geenty and Hansford, 2004) identified a list of key profile parameters expected to be most useful in the prediction of Staple Strength. Replicate testing of 18 midside samples obtained from each mainland state of Australia by 8 operators was used to assess the variability of measuring these parameters.

Table 1. Variances and Confidence Limits (CL) for: (i) ranking animals within a mob; and, (ii) specification of values (i.e., CL includes both within and between site components)

Parameter		Ranking within a mob	Specification of values		
	Mean(unit)	Within lab variance (unit^2)	95% Confidence Limit (unit)	Between lab variance (unit^2)	95% Confidence Limit (unit)
Length(mm)	90.0	23	9.3	13.7	12
MinDiam(µm)	17.6	0.26	1.0	0.10	1.2
MaxDiam(µm)	22.2	0.36	1.2	0.10	1.3
Minpoint(mm)	43.1	283	33	214	44
Maxpoint(mm)	41.1	274	32	146	40
CVD across(%)	20.7	1.18	2.1	0.24	2.3
CVD along(%)	7.2	1.04	2.0	0.48	2.4
Slope (µm/mm)	0.11	0.0016	0.08	0.0012	0.10

A second Fibre Profile Workshop (to be held in Orange on February 21st, 2006) will determine if we submit an OFDA2000 Profile test method to Standards Australia/Standards NZ. These key parameters are being used in a recently-commenced AWI project (EC705–2) to develop a highly heritable correlate with Staple Strength.

Geenty, K. and Hansford, K., Fibre Diameter Profiles – Workshop Proceedings. http://www.sheepcrc.org.au/articles.php?rc=183, accessed on December 1, 2005. Australian Sheep Industry CRC, Armidale, October, 2004.