

SHEEP SKIN TYPE AND ITS RELATIONSHIP WITH ECONOMICALLY IMPORTANT WOOL TRAITS

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Identification of 'soft rolling skins' (SRS) has been proposed as a method to enable the producer to identify sheep that produce wool ideally suited for the modern processor (Watts 1995). This method uses skin and fleece characteristics in an attempt to identify sheep with finer fibres that are more uniform in diameter and length, with a softer handle and often greater staple strength and fleece weight than from sheep with other skin types. The attributes of SRS sheep are said to be attributed to high wool follicle density, high secondary to primary follicle ratio and follicles that are straighter with slender bulbs (Watts 1995).

Associations between sheep skin type and wool quality and production traits were studied in sheep representing 11 fine wool bloodlines from studs in New South Wales.

One hundred and sixteen wethers, born in 1993, were used from the flocks of the Fine Wool Project conducted by CSIRO, Armidale, NSW. Data on these wethers included bloodline, sire/dam group, greasy and clean fleece weights, mean fibre diameter, yield, staple length and strength, resistance to compression, secondary to primary follicle ratio, and total follicle density. The wethers were classed into groups according to skin type, using the method of Watts (1995). These were, skin type 1 - SRS, fleece with a cauliflower tip, pencil sized locks, and a highly mobile skin; skin type 2 - frame, similar fleece characteristics to a 'soft rolling skins' but with a less mobile skin; skin type 3 - flat, staple ends either pointed or curled, locks thin or fluffy and the wool too dry; and skin type 4 - tight, square 'blocky' staple ends, tight skin and large skin wrinkles on the neck as well as other areas of the body.

If the SRS criteria are good indicators of sheep with fine fibres that are uniform in diameter and length, with a soft handle and relatively high fleece weight, then we would expect that within the fine wool bloodlines in NSW there would be some sheep with this skin type. No wethers with soft rolling skins were found in this sample of 116 wethers. There were significant differences in staple length between sheep skin type 3 and 4 and in yield between sheep of skin types 2 and 3 with skin type 4 (Table 1).

It was concluded that sheep skin type has limited value as a predictor of wool quality.

Table 1. Relationship between skin type and wool quality and production traits (least squared means $\pm$ s.e.)

Character	Skin type		
	Type 2	Type 3	Type 4
Mean fibre diameter (mm)	17.1 $\pm$ 0.27	16.7 $\pm$ 0.14	16.9 $\pm$ 0.14
Greasy fleece weight (kg)	2.79 $\pm$ 0.12	2.58 $\pm$ 0.11	2.67 $\pm$ 0.16
Staple strength (N/ktex)	42.7 $\pm$ 2.45	42.2 $\pm$ 1.27	39.5 $\pm$ 1.22
Total follicle density (number/mm ²)	26.7 $\pm$ 1.49	25.7 $\pm$ 0.75	25.7 $\pm$ 0.73
Secondary follicle to primary follicle ratio	25.6 $\pm$ 1.48	24.6 $\pm$ 0.75	24.6 $\pm$ 0.72
Staple length (mm)	83.4 ^{ab} $\pm$ 2.95 _a	83.8 ^a $\pm$ 1.52 ^{**}	77.6 ^b $\pm$ 1.46
Yield (%)	74.6 ^a $\pm$ 1.09 ^a	74.3 ^a $\pm$ 0.56 ^{**}	71.5 ^b $\pm$ 0.54

Means with different superscripts differ significantly.* (P < 0.01), ** (P < 0.0001).

WATTS, J. (1995). 'Advanced Merino production: Elite wool from fibre to fabric.' The Wool and Rural Industries Skill Training Centre, Hamilton, Victoria.