

SKIN FOLD CONTRIBUTES TO FIBRE DIAMETER VARIATION IN THE FLEECE OF MERINO SHEEP

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The perceived value of neck folds and body wrinkles in Merino sheep in terms of the productivity of these sheep, is still subject to debate within the Merino industry. One aspect of fold development of Merino sheep which has received little attention is whether the wool grown on folded skin has similar metrical attributes as that grown on adjacent non-folded skin. Reimers and Swart (1929) reported that both the average fibre diameter and its standard deviation were greater for the wool grown on a neck fold than that of wool grown adjacent to the fold. We extended these observations to examine some metrical traits of wool grown on both neck folds and body wrinkles compared with those on adjacent non-wrinkled areas of skin.

Ten, 10 month old castrated male Merino sheep exhibiting extreme skin development in terms of neck folds and body wrinkles were selected from a commercial medium-wool flock ($n = 400$). They were offered 750 g/day of a pelleted ration containing lucerne hay and oat grain (2:1) for 8 weeks. After 2 weeks wool was closely clipped from 3 positions - neck, midside and rump, using small animal clippers (#40 comb/cutter assembly). At each position, the clipped skin included a fold or a wrinkle, and the skin on either side. The "apron" fold (Carter 1943) was exposed at the neck position. Each sampled position was selected to ensure that the skin on the fold/wrinkle had not been cut during lamb shearing. The regrowth wool at each site was sampled after 6 weeks, again by clipping. The wool grown on the fold was kept separate from that grown beside the fold/wrinkle. The length of staple was measured. The wool was then manually mini-cored (2 mm), and cleaned (Genklene, BDH chemicals), before measurement of the diameters of 2500 fibres, using a Fibre Fineness Diameter Analyser (FDA, Mark II, Digital Electronics). The mean, standard deviation, and the proportion of fibres with diameters greater than 30 μm were estimated. The data were analysed statistically using Genstat 5, release 3.2, with recognition of the auto-correlative nature of the data.

The results of the comparisons of wool grown on and off the wrinkle were consistent at the 3 positions. Consequently, only the results for the major comparison are presented in Table 1.

Table 1. Comparisons of traits for wool grown on and off wrinkles by 10 medium wool Merino wethers. Each trait represents the average of the wool grown at neck, midside and rump positions

Position	Mean fibre diameter (μm)	Standard deviation diameter (μm)	Coefficient variation of diameter (%)	% fibres > 30 μm	Staple length (mm)
On Wrinkle	21.4	4.4	20.5	2.9	13.2
Off Wrinkle	20.7	4.1	20.0	2.2	15.1
Lsd ($P < 0.05$)	0.3	0.1	0.4	0.4	0.5

The results of these observations support and extend those reported by Reimers and Swart (1929). The wool grown on the fold is different and must be considered inferior, having greater mean diameter, greater standard deviation, a greater proportion of fibres with diameters greater than 30 μm , and shorter length of staple. Excessive skin development can then increase the variability of fibres comprising the Merino fleece, and decrease its quality.

CARTER, H.B. (1943). CSIR Bulletin 164.

REIMERS, J.H.W.Th. and SWART, J.C. (1929). Department of Agriculture, Union of South Africa, Science Bulletin No. 83.