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Premium

for

Quality

Wool

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The Components of Clean Fleece Weight

Produced for the CRC for Premium Quality Wool undergraduate program by; Dr. Brad Crook, The University of New England.

www.woolwise.com

Clean fleece weight (CFW) is a function of:

total wool-growing surface area

wrinkling factor

clean wool weight per unit area of skin

smooth body mean no. fibres per surface area unit area smooth skin

mean fibre XS area

mean fibre length

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Clean fleece weight

Component trait:

Derived from:

Smooth body surface area

(Live weight) ^{0.67}

(Wrinkle score)^{0.2}

Wrinkling factor

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Mean no. fibres per unit area smooth skin

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Mean fibre XS area

Mean fibre length

Total follicle density per unit area smooth skin

 π (diameter² +V^D)/4

(Staple length) x h

Brad Crook Source: Turner, H.N. (1958)

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Economic importance of component traits

- Live weight
 - value of surplus animals vs feed intake
- Wrinkle
 - reduced capacity for thermoregulation of testicles in highly wrinkle rams
 - lower flock reproductive rate with high wrinkle
- Fibre diameter
 - increasing value with decreasing diameter
 - price differentials increase with decreasing diameter
- Staple length
 - optimum lengths: premiums and discounts
- Follicle density
 - no direct economic value

12

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Phenotypic correlations between CFW and its component traits

371		Fine ¹ <12 mth	Medium ² ~16 mth	Broad [:] ~16mth
CRC	Live weight	0.44	0.23	0.36
for	Wrinkle score	-	0.12	0.20
Quality	Average diameter	0.26	0.14	0.13
Wool	Follicle density	0.04	0.16	0.09
201	Staple length	0.36	0.37	0.32

1. Swan et al. (1995), Purvis & Swan (1997); 2. Brown & Turner (1968); 3. Gregory (1982)

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Level of nutrition: an example of the management group effect

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Clean fleece weight Live weight Wrinkle score **Average diameter Follicle density Staple length**



Brad Crook Source: Morley, F. (1956)

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Selective breeding: changing the directions

Selected Control 18% **Clean fleece weight** CRC for 3% Live weight Premium 10% Wrinkle score Quality 1% **Average diameter** Wool 11% **Follicle density** 7% **Staple length**

> **Brad Crook** Source: Turner, H.N. (1958)

 \bigstar

 $\frac{1}{2}$

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