CRC for Premium Quality Wool

The Genetics of CV of Fibre Diameter

Produced for the CRC for Premium Quality Wool undergraduate program by;
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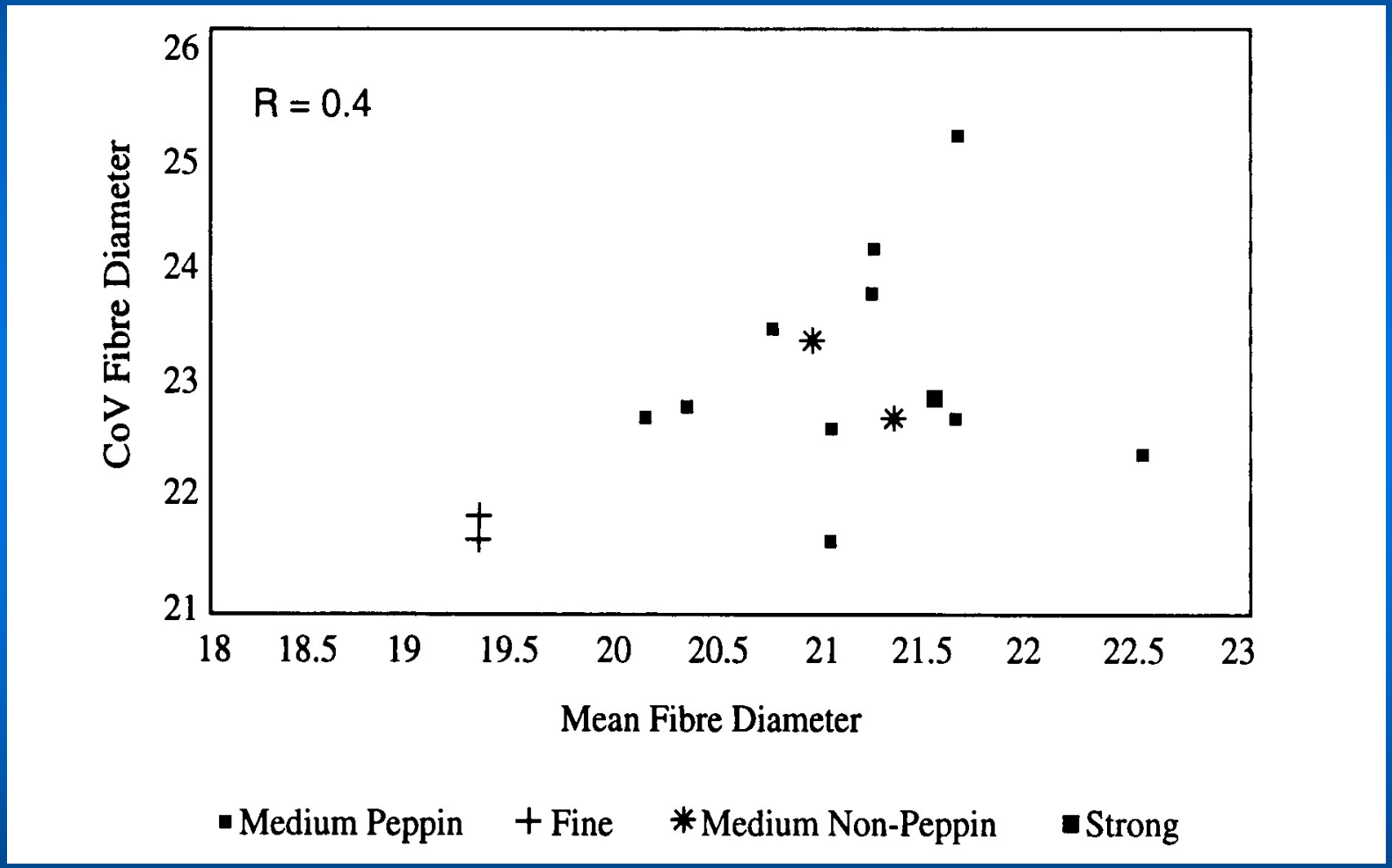
Between-strain and between-flock variation in CVFD



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Source: Taylor and Atkins (1992)

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Phenotypic variation in CVFD

FLOCK	St. deviation of CVFD (%)	Shorn
Great Southern Agricultural Research Inst. (WA)		
Hogget rams	2.37	Spr.
Commercial environment	2.46	Spr.
Stud environment	2.49	Spr.
Mature ewes	2.51	Spr.
Turretfield Research Centre (SA)		
10 mth of age (6 mth wool growth)	2.63	Aut.
16 mth of age (6 mth wool growth)	2.68	Spr.
CSIRO (Armidale)		
Fine wool (10 mth wool growth)	2.18	Spr.

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Source: Greeff (1996)

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Heritability estimates of CVFD

FLOCK	Herit.	Shorn
Great Southern Agricultural Research Inst. (WA)		
Hogget rams	0.45	Spr.
Commercial environment	0.53	Spr.
Stud environment	0.74	Spr.
Mature ewes	0.58	Spr.
Turretfield Research Centre (SA)		
10 mth of age (6 mth wool growth)	0.59	Aut.
16 mth of age (6 mth wool growth)	0.61	Spr.
CSIRO (Armidale)		
Finewool (10 mth wool growth)	0.33	Spr.

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Source: Greeff (1996)

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Testing Costs

- **Staple strength:**
  - 10 staples per animal, plus washing yield
  - AWTA test using ATLAS: approx. $9 per animal
  - Agritest SB (restricted availability): approx. $3 per animal
  - therefore use of staple strength measurements likely to be limited to 2nd-stage selection
- **CVFD:**
  - midside sample
  - flock testing lab's: from $1.80

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Correlation between 10 and 16 month records

	Phenotypic	Genetic
Staple Strength	0.23	0.68
CVFD	0.62	0.92

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Source: Ponzoni et al. (1995)

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Efficiency of using CVFD to improve SS compared to direct selection for improved SS

$$\frac{\text{Indirect response in SS}}{\text{Direct response in SS}} = \sqrt{\frac{\text{Herit. CVFD}}{\text{Herit. SS}}} \times \text{Genetic corr. between SS and CVFD}$$

$$= \sqrt{\frac{0.50}{0.30}} \times -0.62$$

$$= 0.80$$

Selection using CVFD to improve SS could be 80% as efficient as direct selection for improved SS.

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Source: Greeff (1996)

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