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for

Premium

Quality

Wool

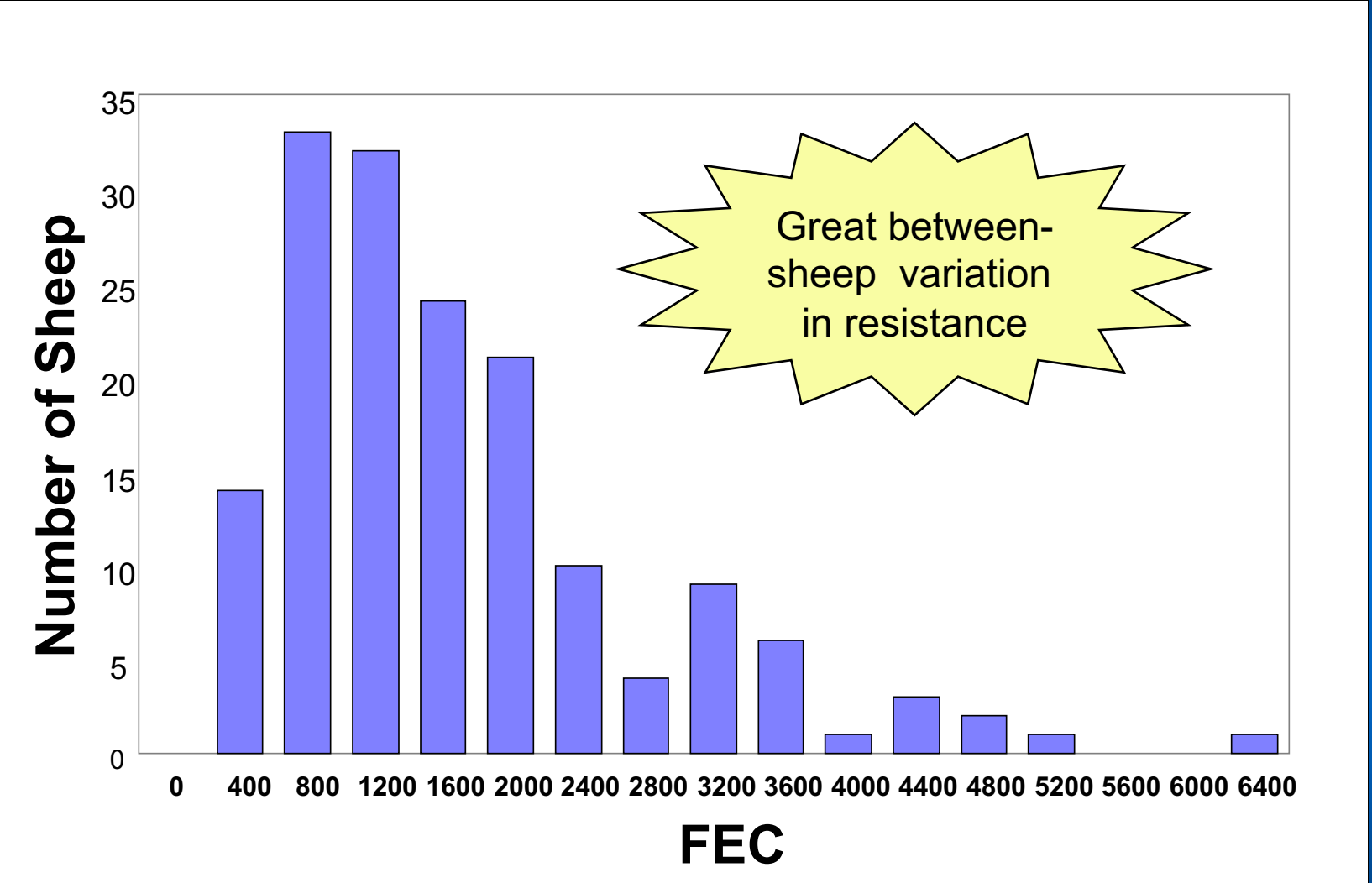
Genetic Variation in Disease Resistance Traits

Produced for the CRC for Premium Quality Wool undergraduate program by;
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Typical distribution of FECs

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Heritability estimates

Flystrike	Merino	incidence	0.10-0.58
Fleece rot	Merino	severity, incidence	0.05-0.80
Dermatophilosis	Merino	severity, incidence	0.05-0.44
Scouring &dags	Merinos Romneys	severity, incidence	0.08 0.12-0.36
Footrot	Merino	severity, incidence	0.15-0.29
	Romney	severity, liability	0.14 0.17-0.28
	Mixed	Incidence liability	0.03-0.34 0.07-0.55
Facial eczema	Romney	gammaglutamyl- transferase	0.45±0.03
Rye grass staggers	Romney xCoopworth	incidence	0.07±0.02
		liability	0.27±0.08

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Source: Raadsma et al. (1997)



Heritabilities - Roundworms

	Age	FEC Counts	Heritability	Source
Natural mixed infections	6,12m	2x	0.42±0.14	Cummins et al. 1991
	10,22m	1x	0.16±0.12	Eady et al. 1996
Artificial <i>H. contortus</i>	18m	1x	0.23±0.13	Piper 1987
	4-5m	2x	0.30±0.10	Albers et al. 1987
	4-5m	1x	0.29±0.03	Woolaston & Piper 1995
	6-8m	1x	0.30±0.13	Eady et al. 1996
Artificial <i>T. colubriformis</i>	4-5m	5x	0.41±0.04	Woolaston et al. 1991
	5-13m	1x	0.20±0.11	Eady et al. 1996

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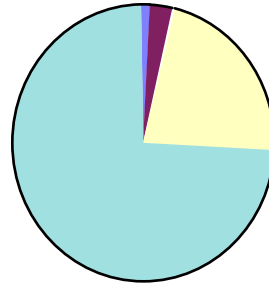
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Source: Eady et al. (1996)



Sources of Genetic Variation

Worm Resistance

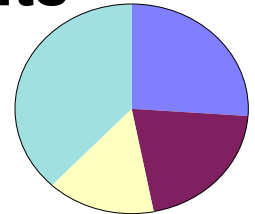


Source of Variation

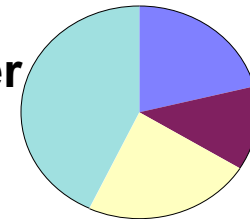


Production Traits

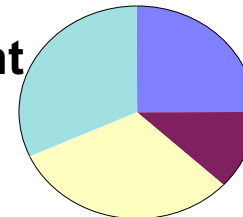
Fleece weight



Fibre diameter



Body weight

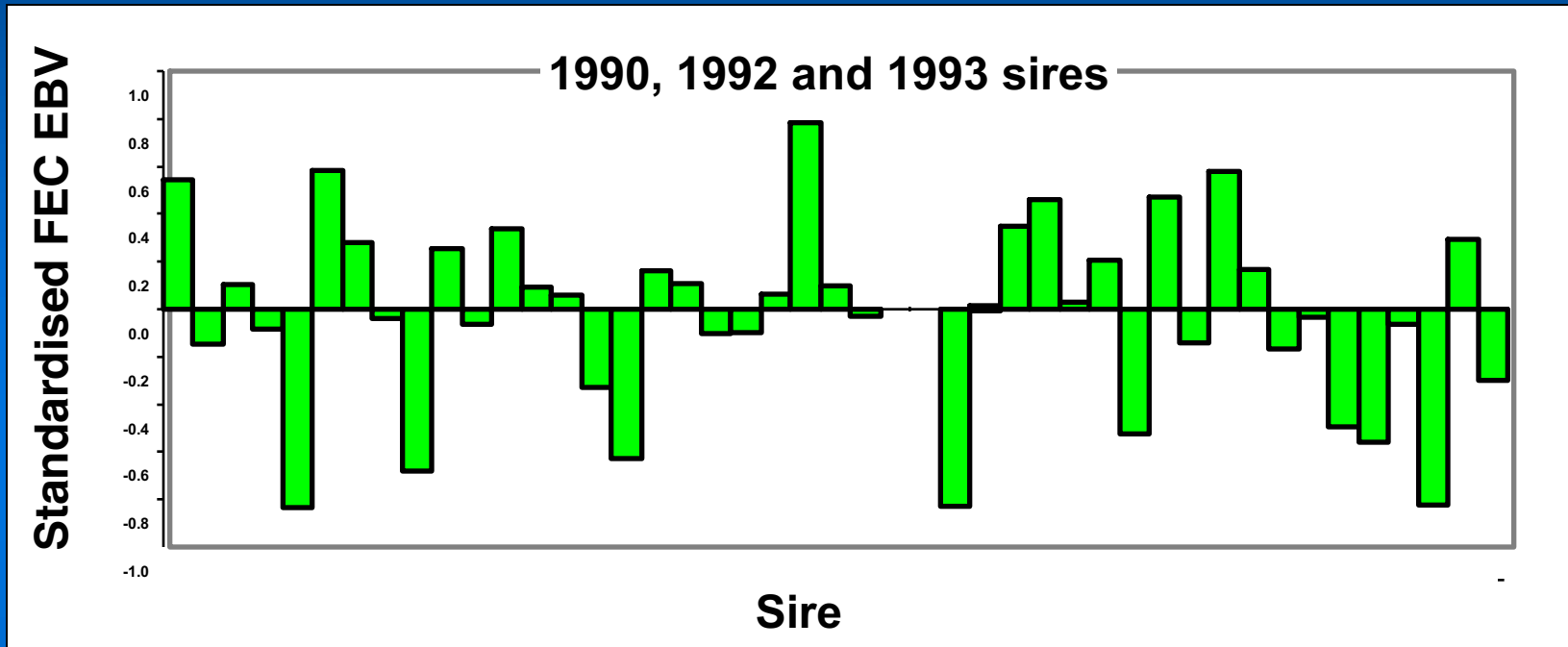


- Most genetic variation in worm resistance is found within flocks
- There is very little variation between bloodlines and strains of Merino
- This contrasts with the situation for wool and growth traits
- Resistant sires can be found within existing sources of rams

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Source: Eady et al. (1996)



Faecal egg count EBVs for New England Sire Evaluation Scheme



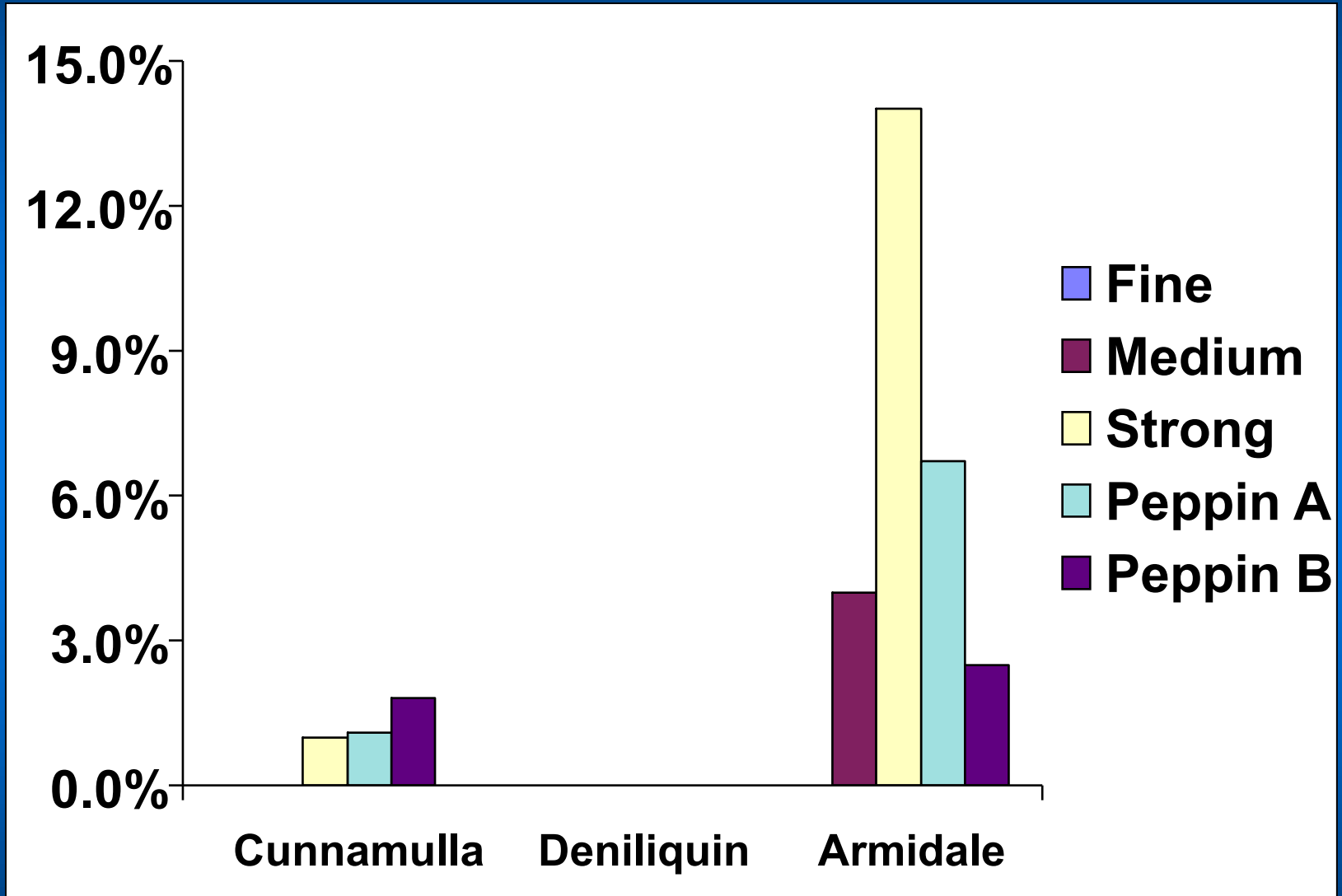
- Some Sire Evaluation Schemes include resistance to worms
- There is much variation within ram sources
- High-producing rams can be highly resistant

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Incidence of Fleece Rot

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Source: Dunlop & Hayman (1958)



What gains are possible with fleece rot / body strike?

- Annual reductions of 1.0-1.4% in fleece rot and 0.4% in body strike incidence in Merinos

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Source: Mortimer et al. (1998)