Breech Genetics
– getting them out there

Sam Gill
Manager – Sheep Genetics
MLA / AWI

Breeding is long term…..

SHEEP GENETICS

Maternal Great - Grand Sires (12.5%)

Maternal Grand Sires (25%)

Sires (50%)

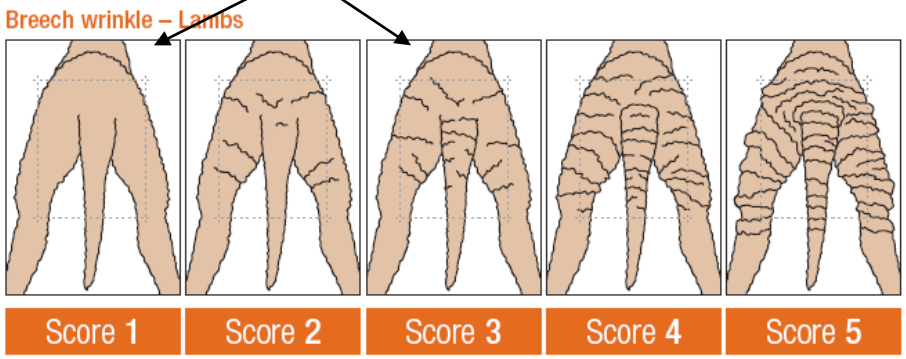
87% of genetic composition of flock is determined by the sires used over the last 3 generations (10 years)

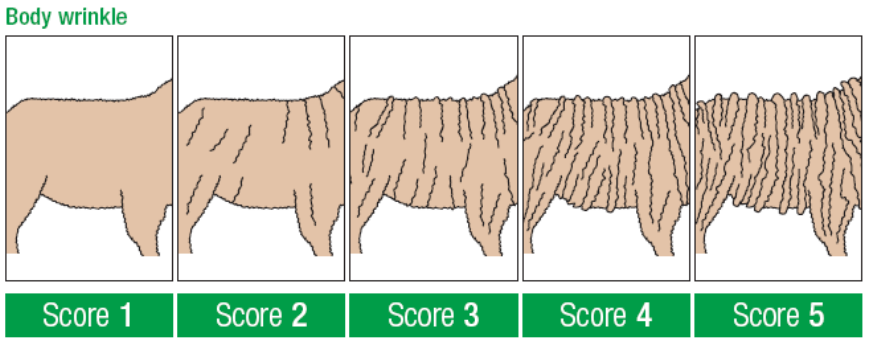
awi Australian Wool Innovation Limited

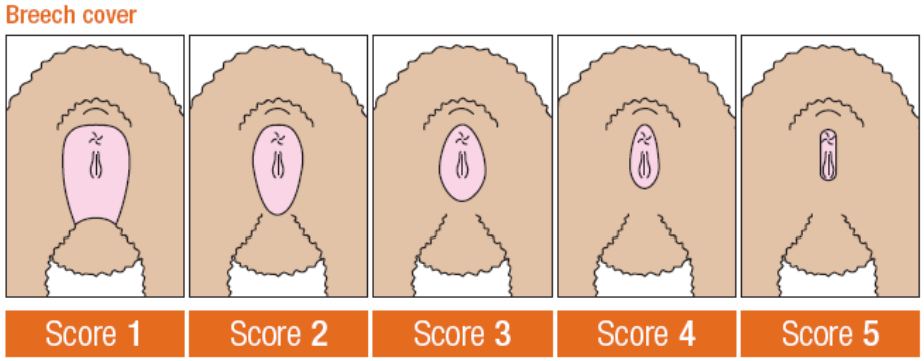
Key traits

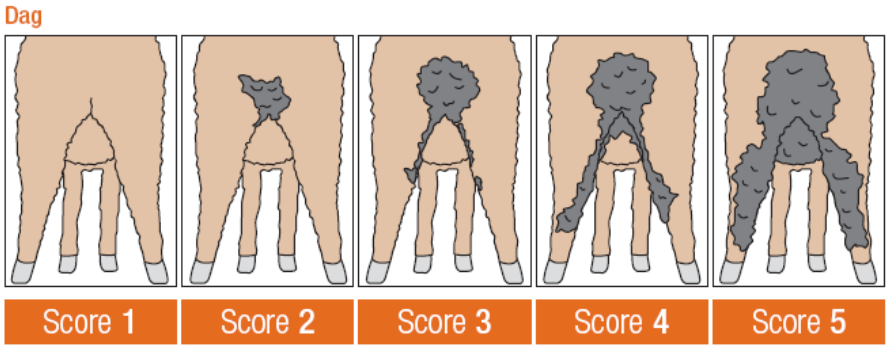
- Available from AWI / MLA / Sheep Genetics

What is plain?



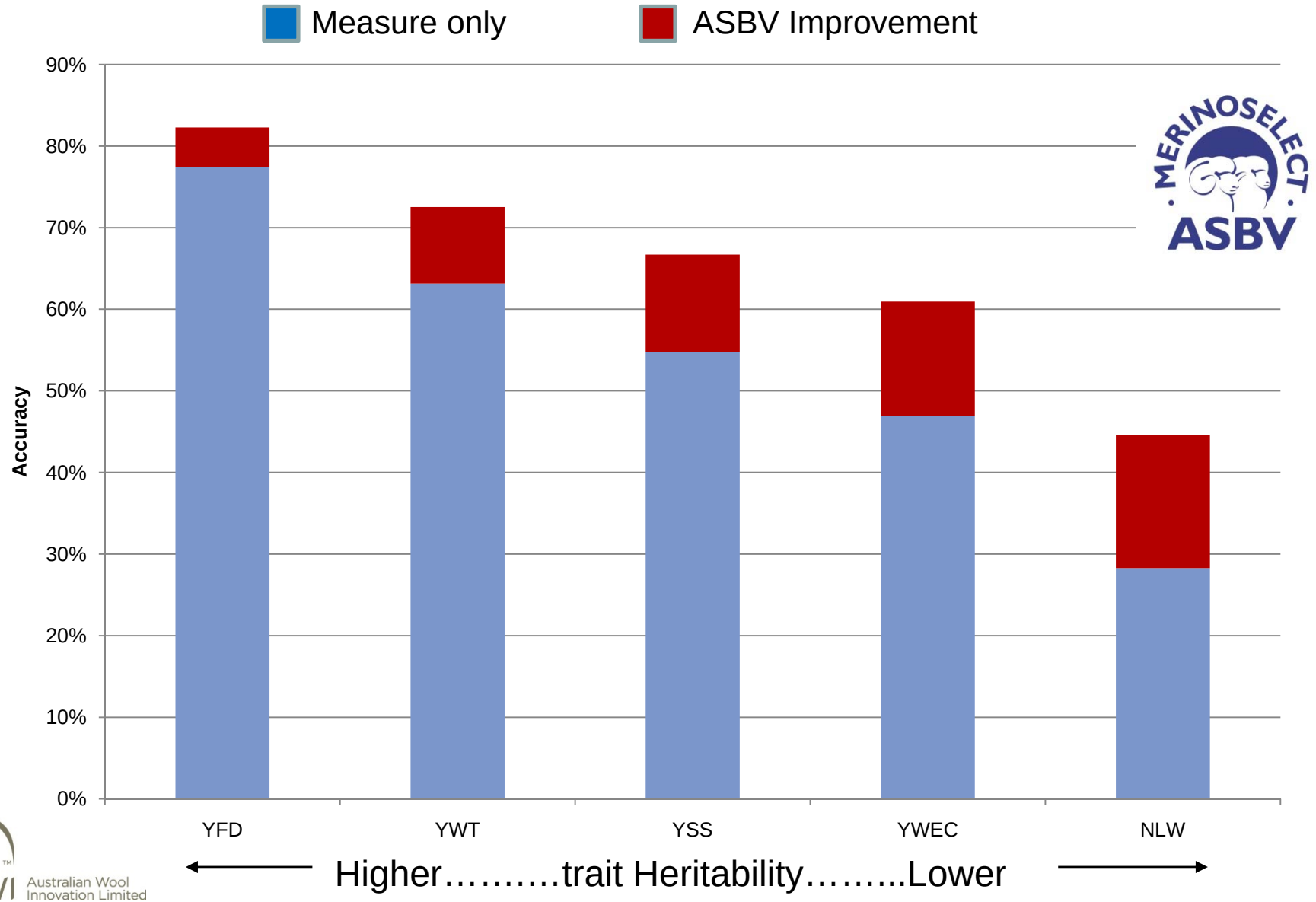






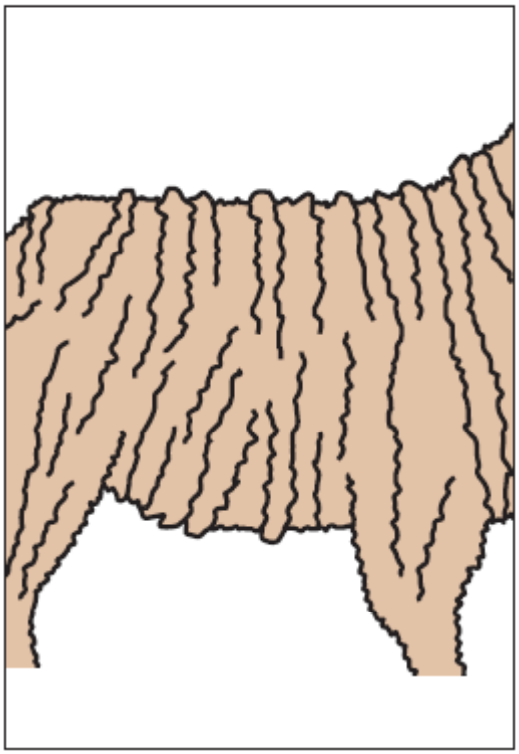
Need national common language or standards to most accurately describe visual traits

ASBVs improves trait selection accuracy



awi Australian Wool Innovation Limited

“Feed wrinkle”



What about the effects of environment and or nutrition on Wrinkle Scores

- Twins are plainer than singles: -0.3 to -0.5
- Drought born are plainer: -0.5 to -1.0
- Maiden dam progeny plainer: -0.1 to -0.2

For faster progress to select for “genes”, not “nutrition”

Development of Breeding Values

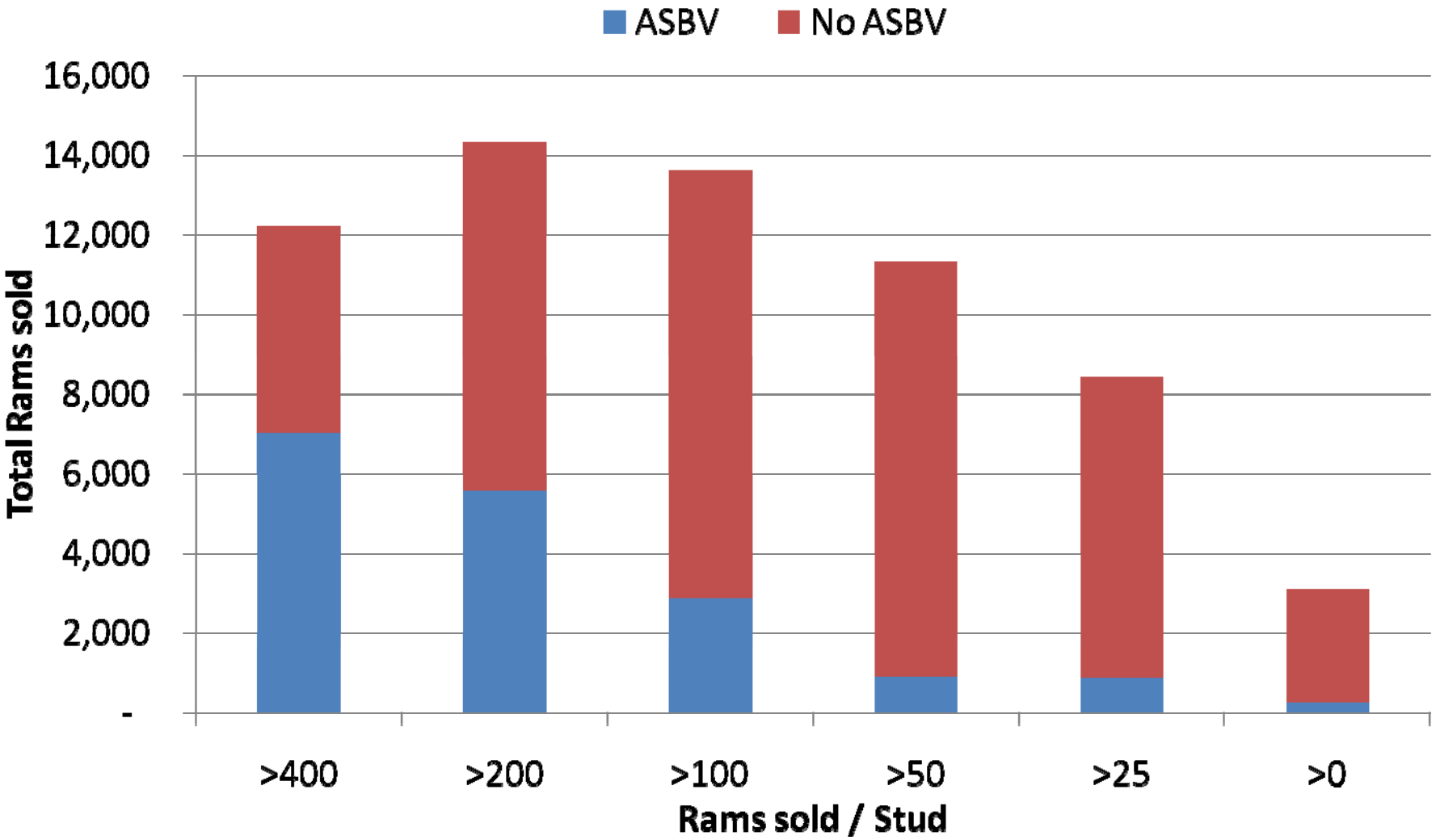
Australian Sheep Breeding Values

SHEEP GENETICS

- A joint program between Meat & Livestock Australia and Australian Wool Innovation
- A genetic comparison between sheep which accounts for different environments by using common link animals
- A common language for sheep breeders
  - *MERINOSELECT; Sheep CRC; Sire Evaluation; AWI Breech Sites*

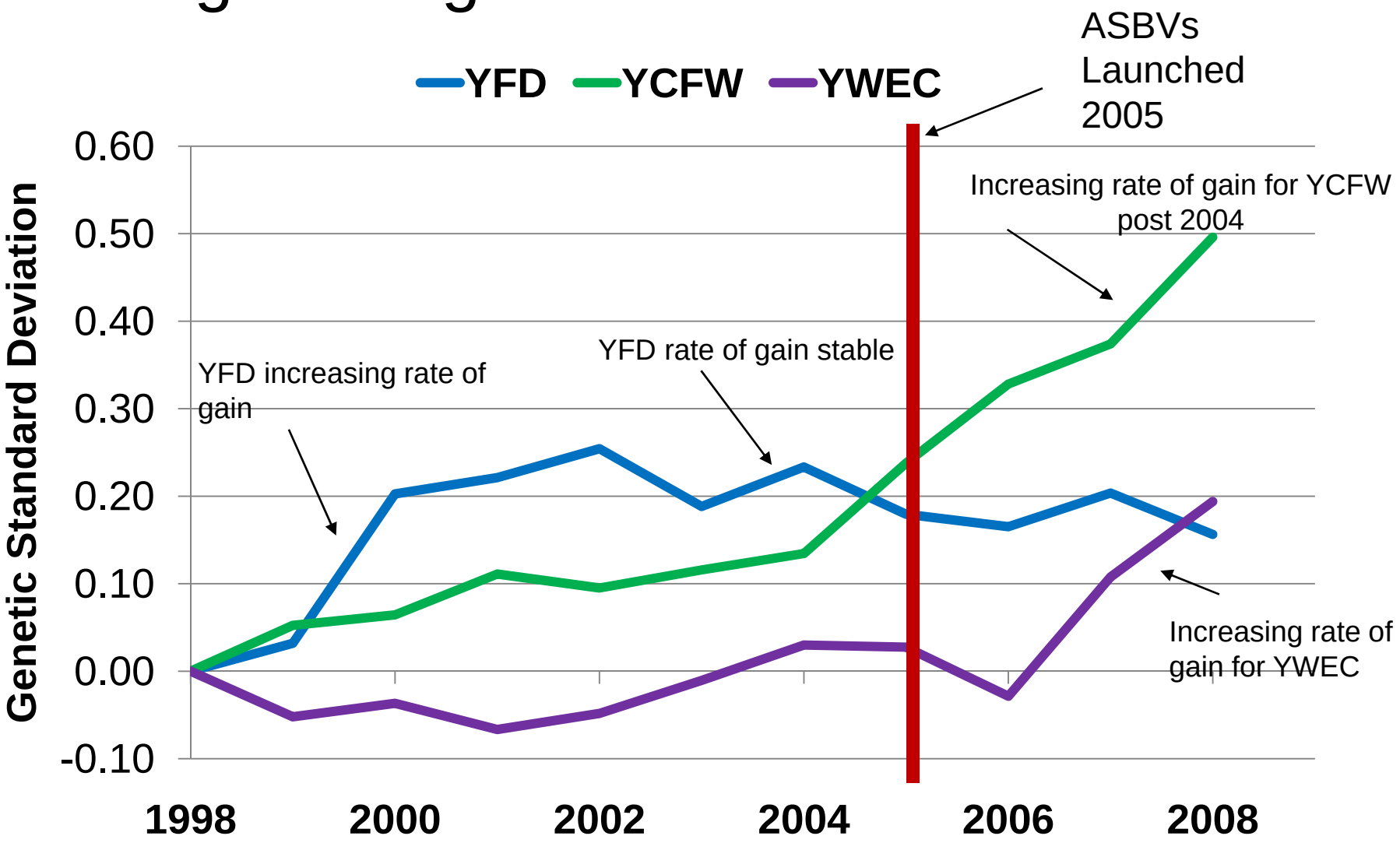
Rams sold in 2008

Source: AASMB website

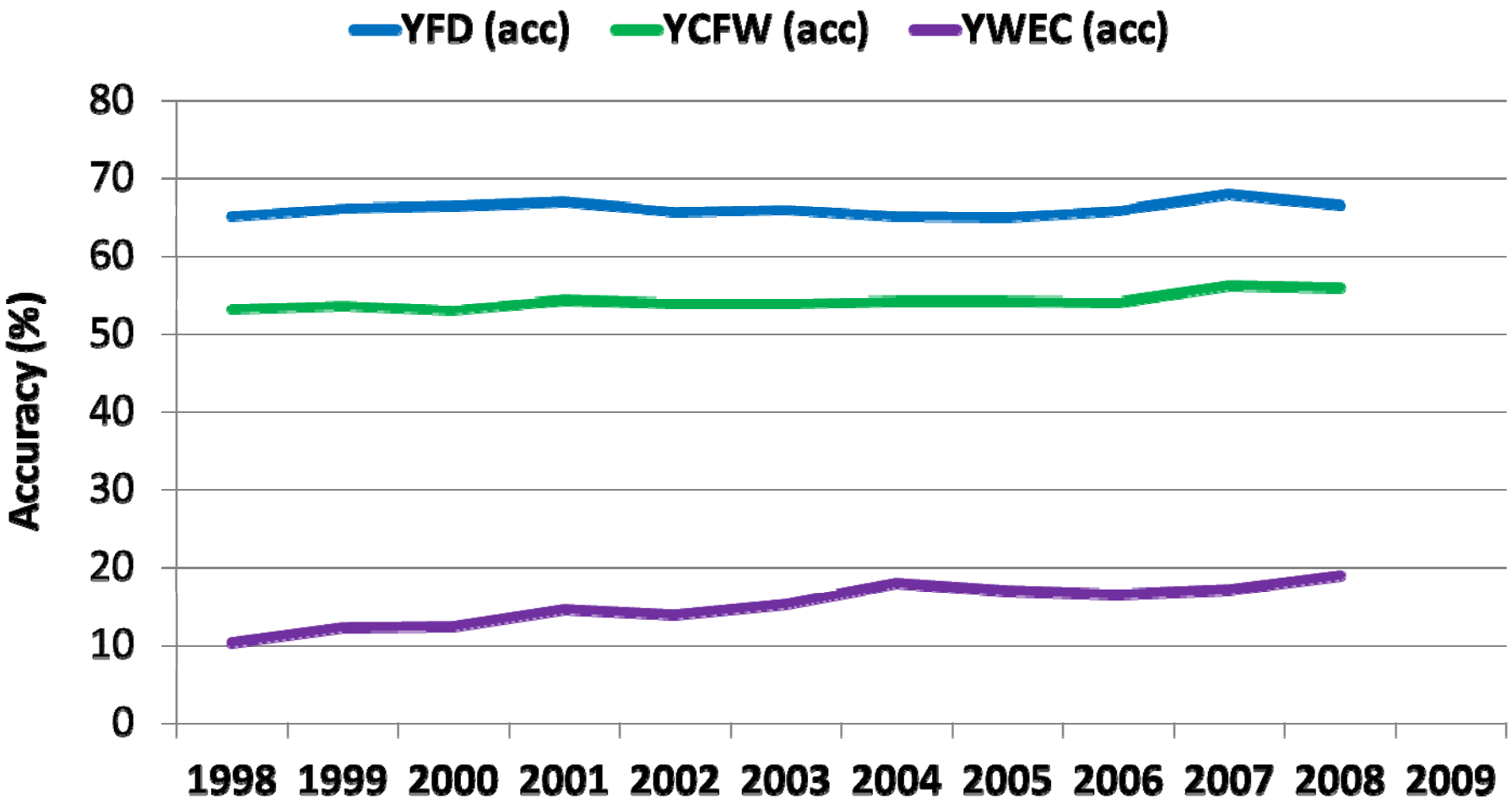


~ 40% with ASBVs from studs selling more than 100 rams

How quickly are we improving? What is our rate of genetic gain?



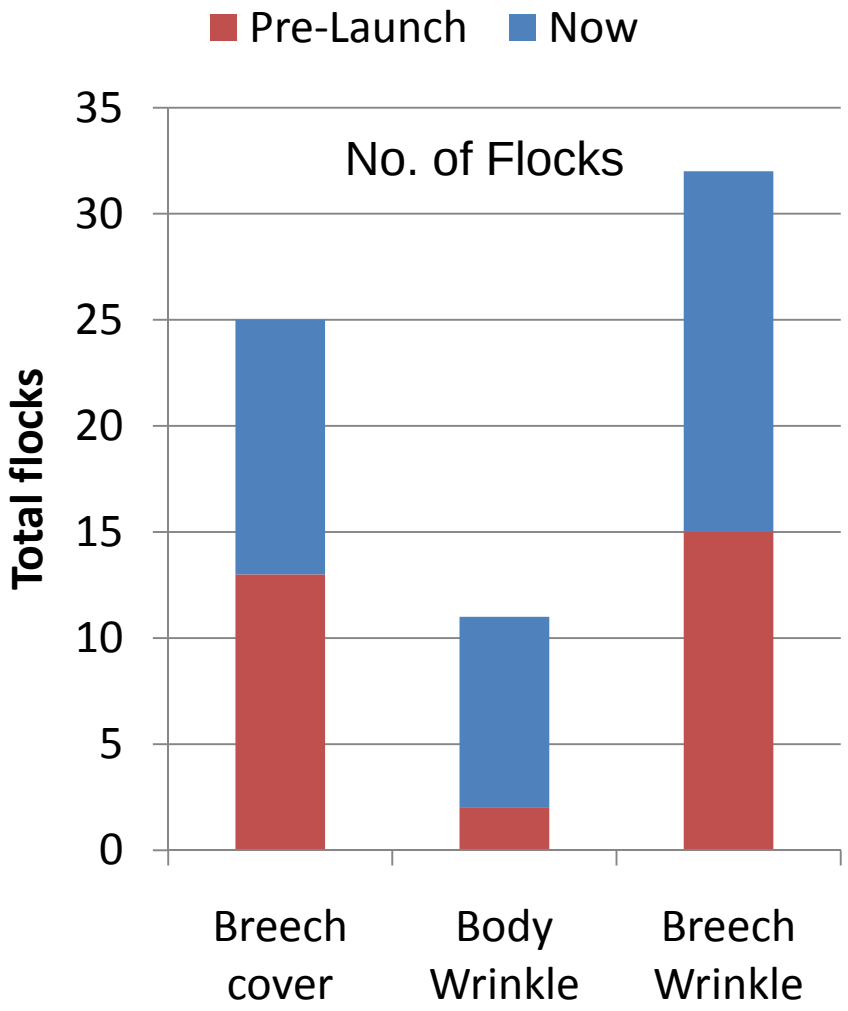
What about trait accuracy?

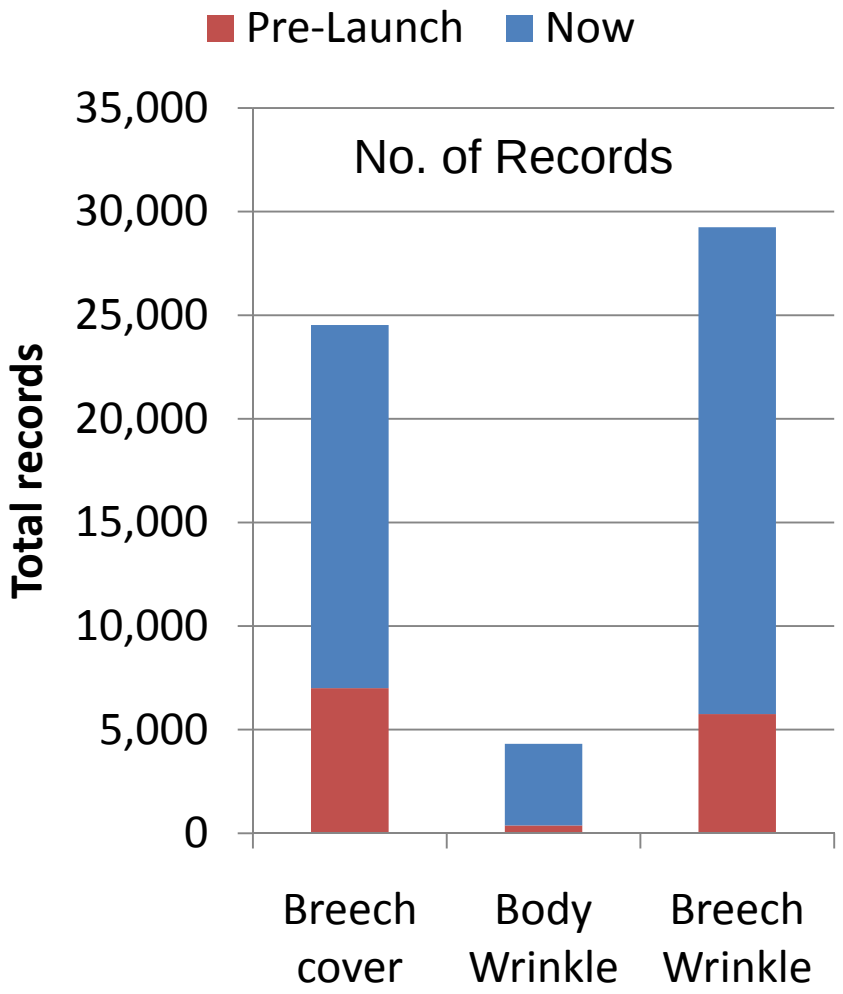


What's new?

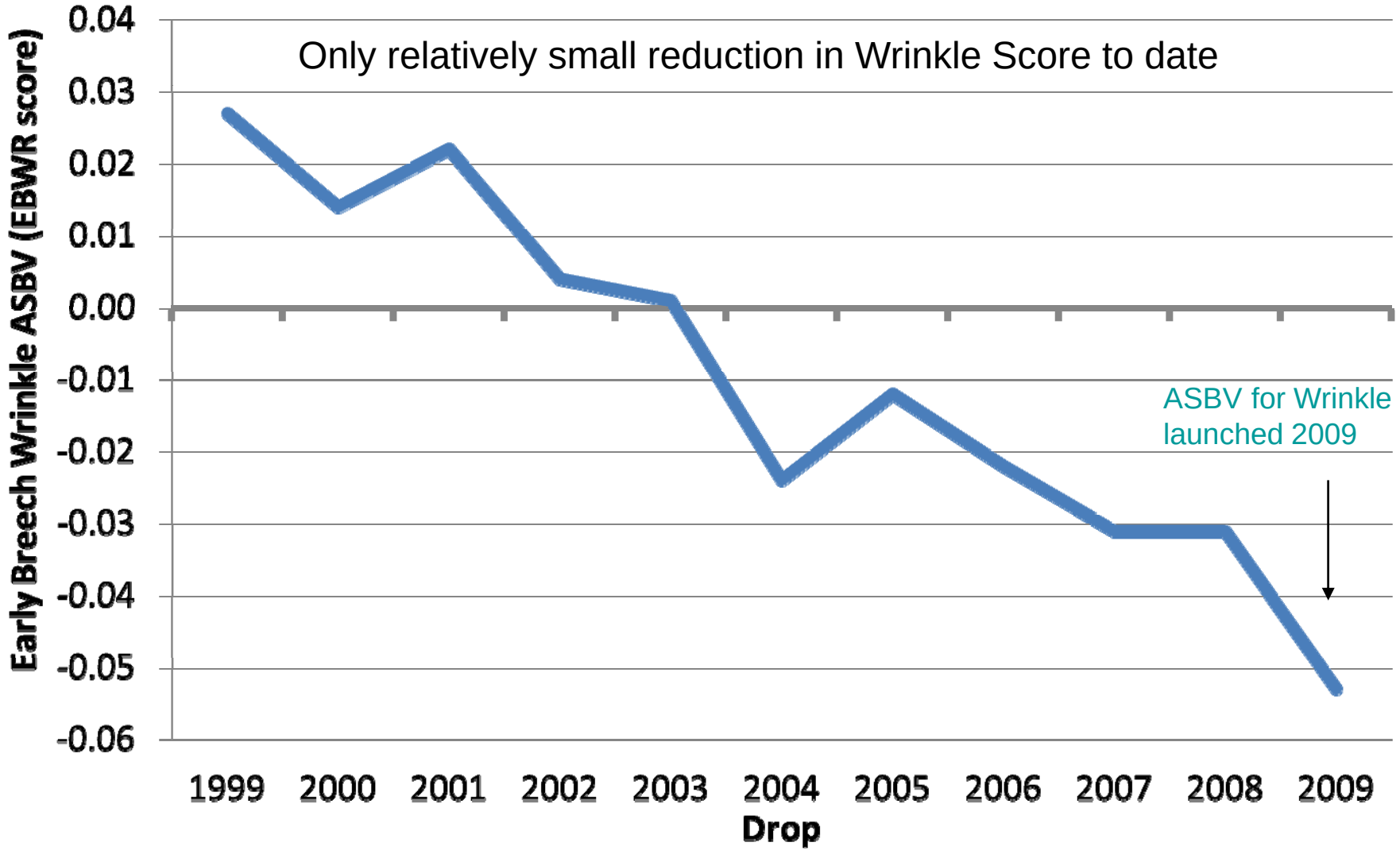
- Primary traits
  - Breech Wrinkle launched September 2009

Number of Industry records have increased

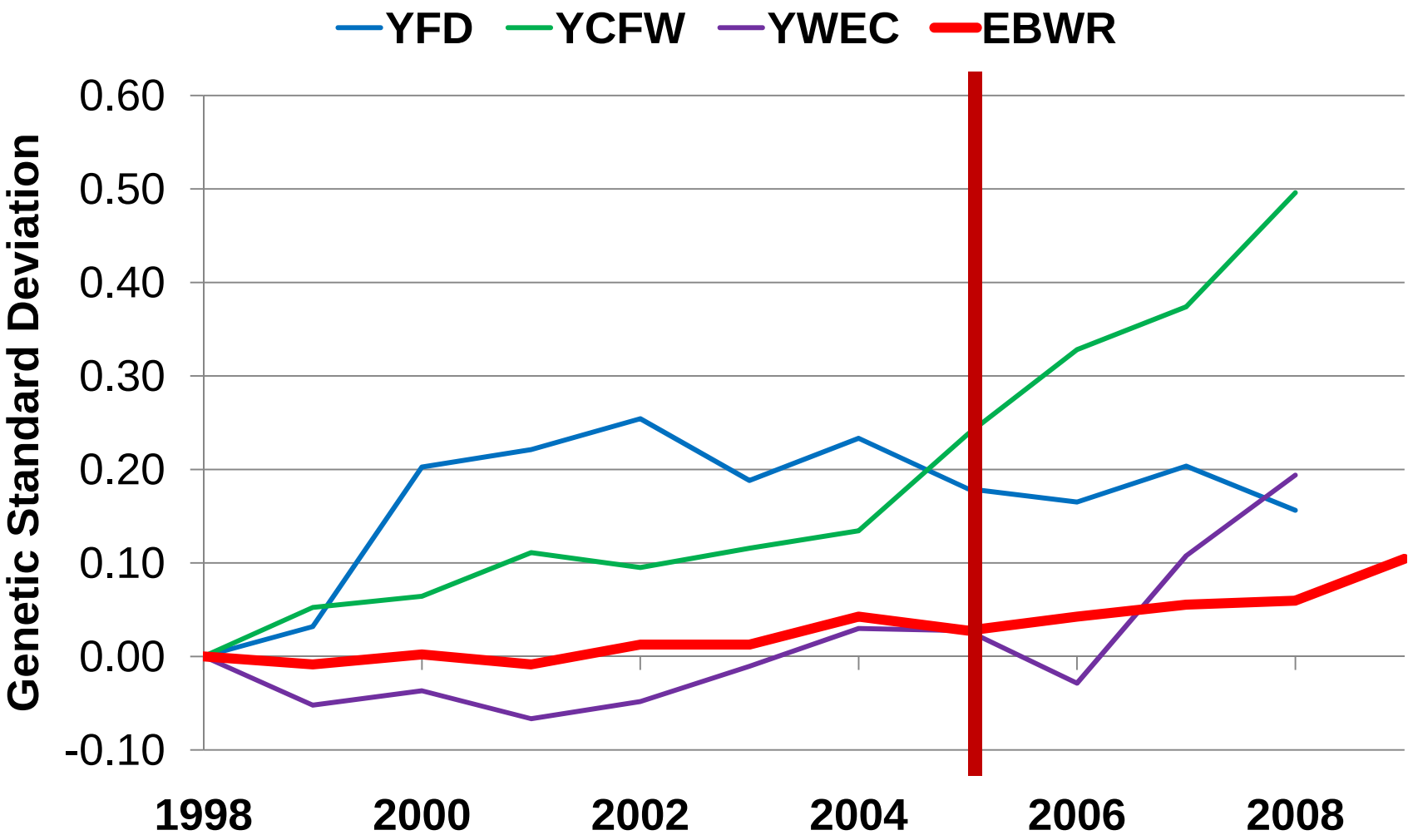




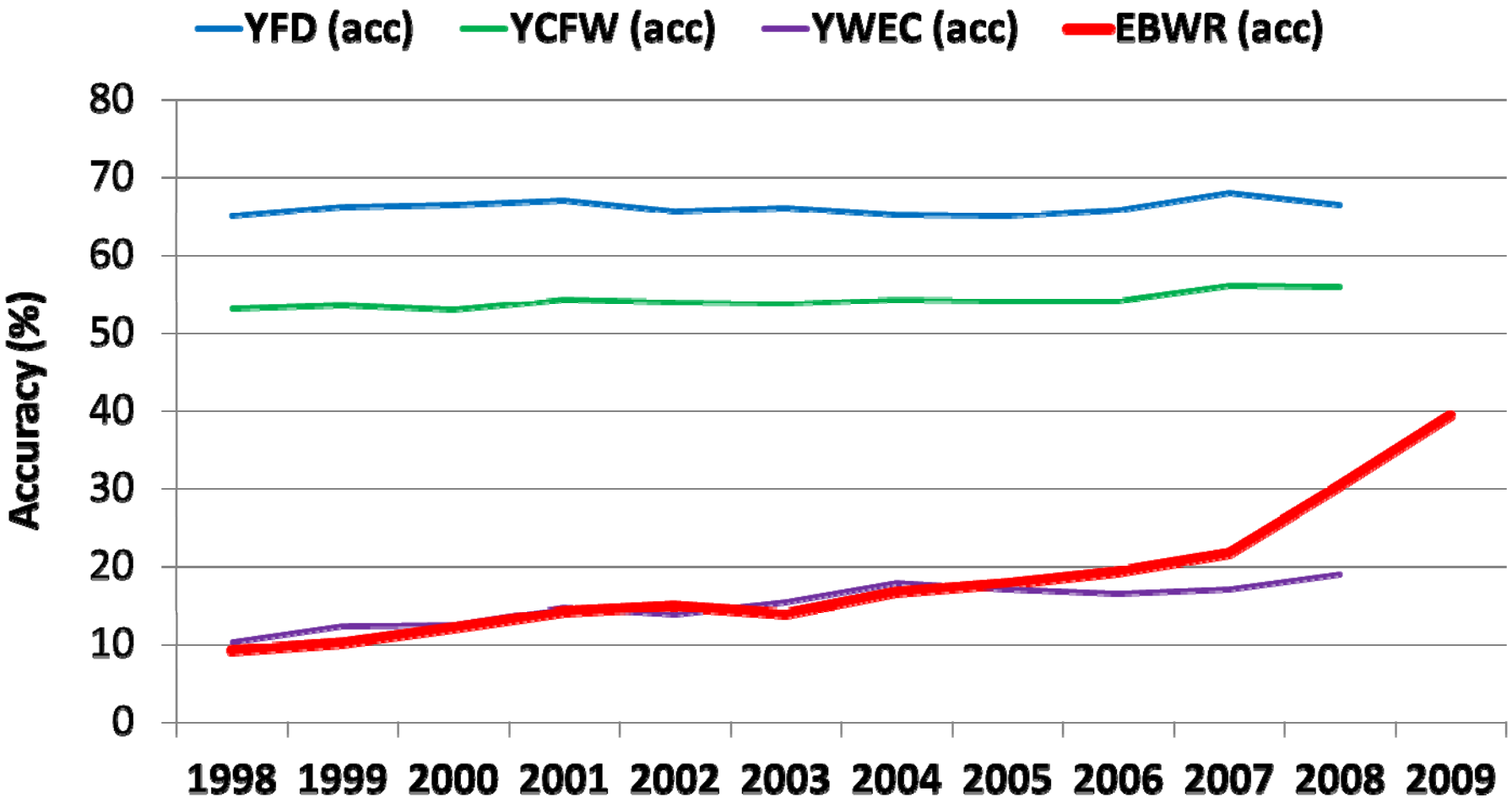
Early breech wrinkle genetic trend



How quick are we improving? What is our rate of genetic gain?



What about trait accuracy?

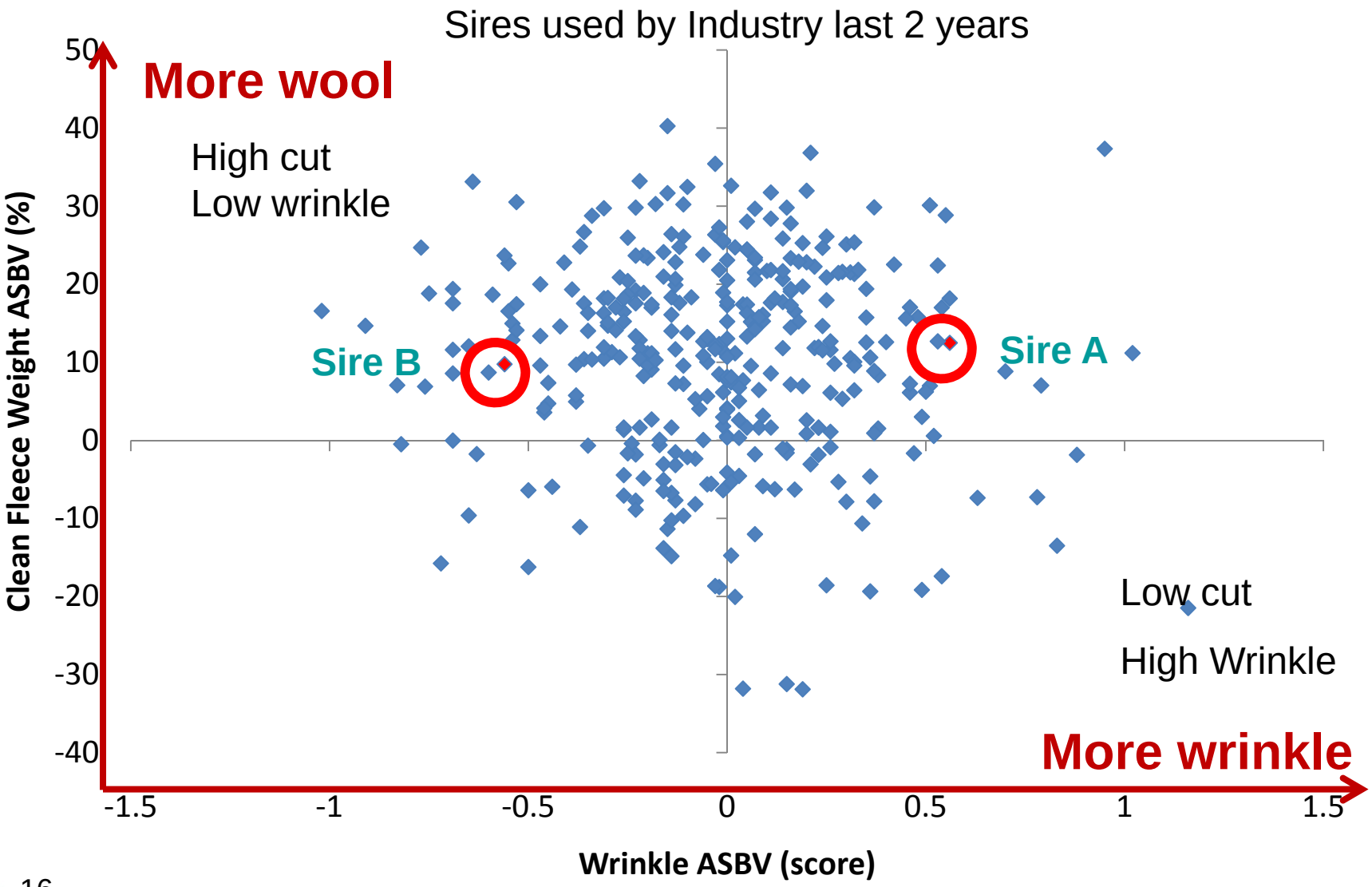


Do I lose fleece weight?

Fleece weight is made up of 5 key traits – all measureable

Base	Component	Trait	ASBV?
Surface Area	Smooth Surface Area	Body Weight	**Yes (WT)**
	Wrinkle factor	Wrinkle Score	**Yes (BWR)**
Production per area unit	Fibre size	Fibre Diameter	**Yes (FD)**
	Fibre length	Staple Length	**Yes (SL)**
	Fibre density	S:P ratio (Colour)	**Soon**

Genetic variation for wrinkle



What change is possible?

"Same dams very different progeny"

Sire A

- Index 144
- CFW +12 %
- EBWR +0.6 score

Sire B

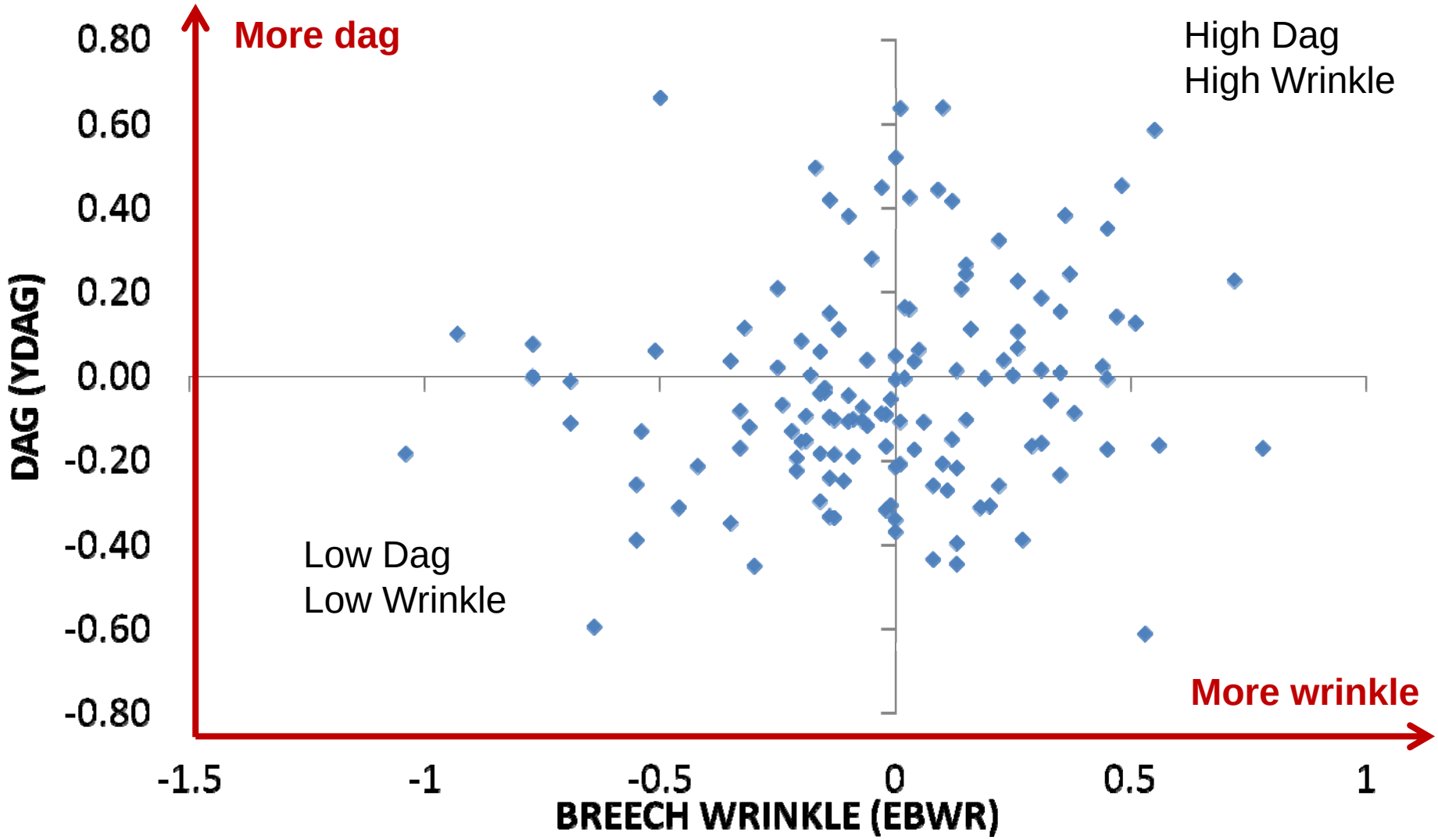
- Index 144
- CFW +10 %
- EBWR -0.6 score

What's new?

- Primary traits
  - Breech Wrinkle launched September 2009
  - Dag ASBV released by September 2010
    - Second key trait
    - Lots of records over many years
    - On-farm and R&D data
- Secondary traits
  - Breech cover released next year?
  - Greasy wool colour released next year?

Dag vs Breech Wrinkle

138 sires used 2008/09



awi Australian Wool Innovation Limited

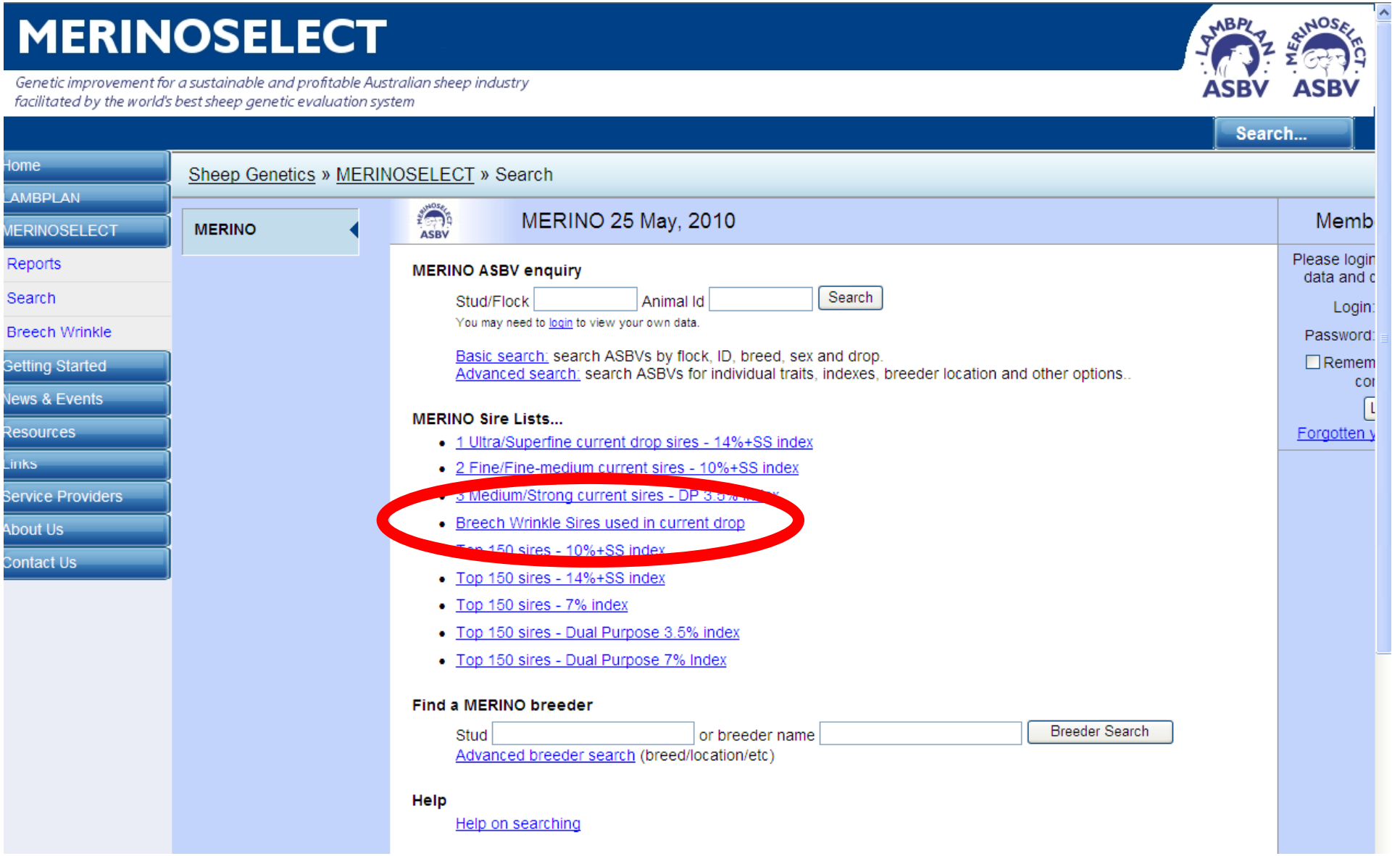
Where do I find Wrinkle ASBVs?

www.sheepgenetics.org.au

- Wrinkle ASBV page
  - Trait leader list
  - Genetic trend
  - Percentiles
  - Links to Sheep CRC management page
- Web search engine

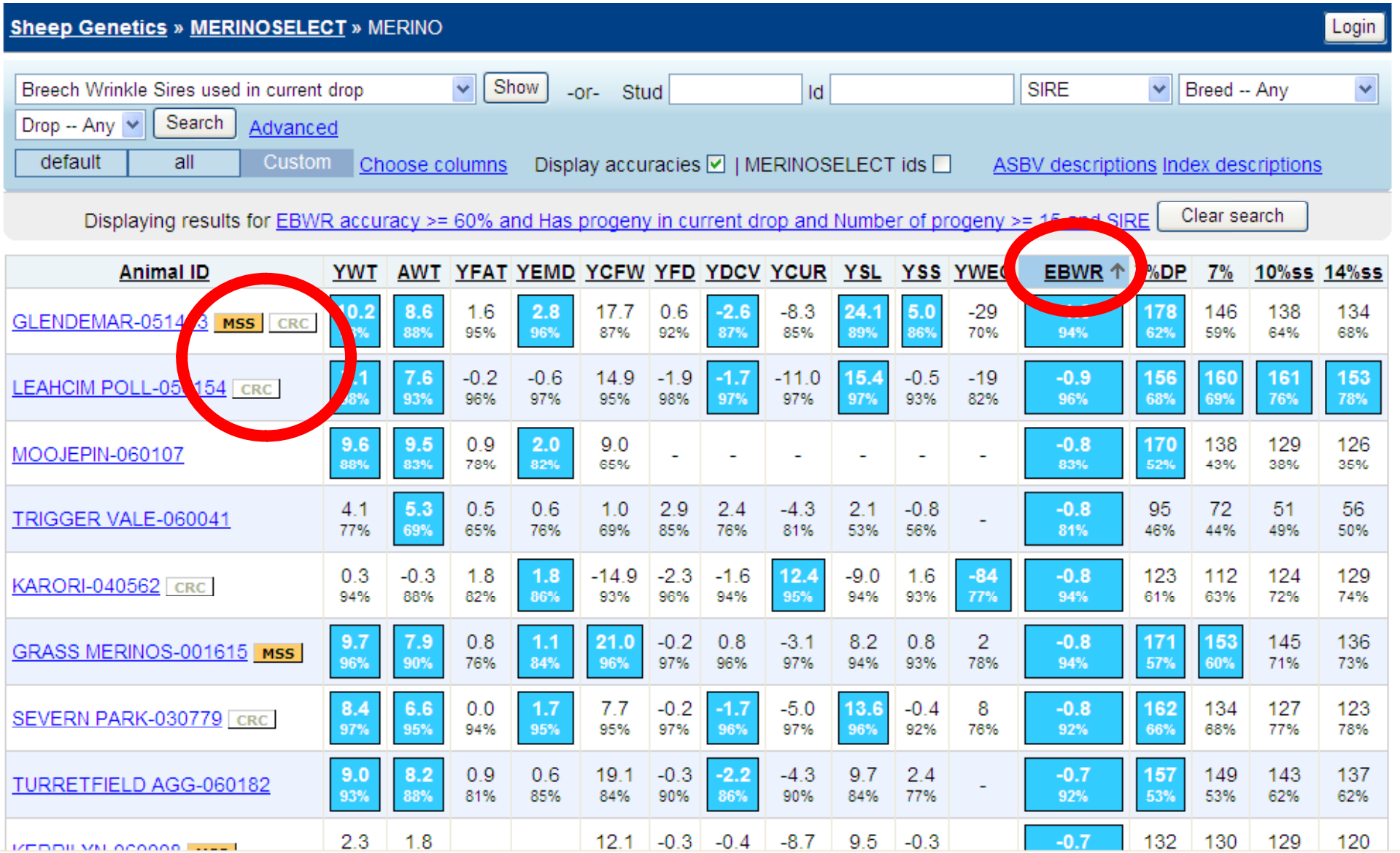
Search Page

www.sheepgenetics.org.au



List of current sires that are trait leaders for Breech Wrinkle

www.sheepgenetics.org.au



Sheep Genetics » MERINOSELECT » MERINO — Login

Breech Wrinkle Sires used in current drop — Show -or- Stud Id SIRE Breed -- Any

Drop -- Any — Search — Advanced

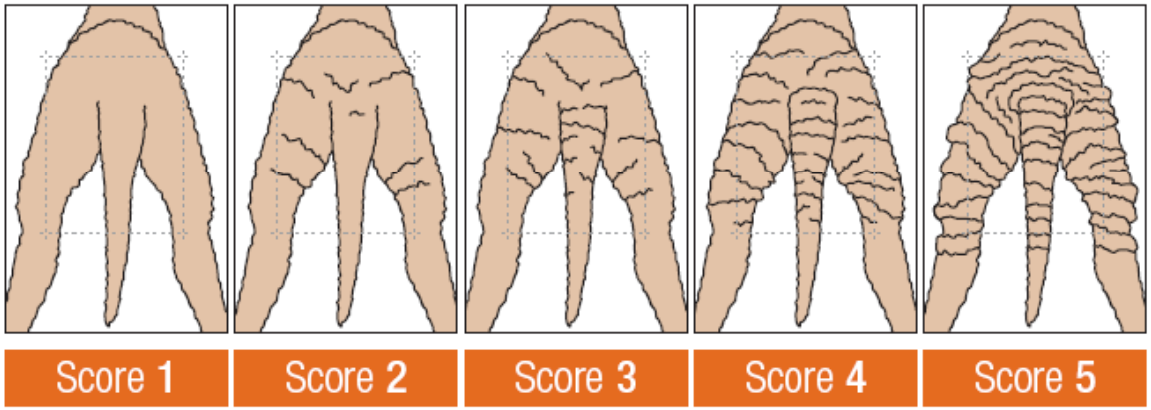
default | all | Custom — Choose columns — Display accuracies ☑ | MERINOSELECT ids ☐ — ASBV descriptions — Index descriptions

Displaying results for EBWR accuracy >= 60% and Has progeny in current drop and Number of progeny >= 15 and SIRE — Clear search

Animal ID	YWT	AWT	YFAT	YEMD	YCFW	YFD	YDCV	YCUR	YSL	YSS	YWE	EBWR ↑	%DP	7%	10%ss	14%ss
GLENDEMAR-0514[illegible]3 MSS CRC	10.2 [illegible]%	8.6 88%	1.6 95%	2.8 96%	17.7 87%	0.6 92%	-2.6 87%	-8.3 85%	24.1 89%	5.0 86%	-29 70%	[illegible] 94%	178 62%	146 59%	138 64%	134 68%
LEAHCIM POLL-05[illegible]154 CRC	[illegible].1 [illegible]%	7.6 93%	-0.2 96%	-0.6 97%	14.9 95%	-1.9 98%	-1.7 97%	-11.0 97%	15.4 97%	-0.5 93%	-19 82%	-0.9 96%	156 68%	160 69%	161 76%	153 78%
MOOJEPIN-060107	9.6 88%	9.5 83%	0.9 78%	2.0 82%	9.0 65%	-	-	-	-	-	-	-0.8 83%	170 52%	138 43%	129 38%	126 35%
TRIGGER VALE-060041	4.1 77%	5.3 69%	0.5 65%	0.6 76%	1.0 69%	2.9 85%	2.4 76%	-4.3 81%	2.1 53%	-0.8 56%	-	-0.8 81%	95 46%	72 44%	51 49%	56 50%
KARORI-040562 CRC	0.3 94%	-0.3 88%	1.8 82%	1.8 86%	-14.9 93%	-2.3 96%	-1.6 94%	12.4 95%	-9.0 94%	1.6 93%	-84 77%	-0.8 94%	123 61%	112 63%	124 72%	129 74%
GRASS MERINOS-001615 MSS	9.7 96%	7.9 90%	0.8 76%	1.1 84%	21.0 96%	-0.2 97%	0.8 96%	-3.1 97%	8.2 94%	0.8 93%	2 78%	-0.8 94%	171 57%	153 60%	145 71%	136 73%
SEVERN PARK-030779 CRC	8.4 97%	6.6 95%	0.0 94%	1.7 95%	7.7 95%	-0.2 97%	-1.7 96%	-5.0 97%	13.6 96%	-0.4 92%	8 76%	-0.8 92%	162 66%	134 68%	127 77%	123 78%
TURRETFIELD AGG-060182	9.0 93%	8.2 88%	0.9 81%	0.6 85%	19.1 84%	-0.3 90%	-2.2 86%	-4.3 90%	9.7 84%	2.4 77%	-	-0.7 92%	157 53%	149 53%	143 62%	137 62%
[illegible]	2.3	1.8			12.1	-0.3	-0.4	-8.7	9.5	-0.3		-0.7	132	130	129	120

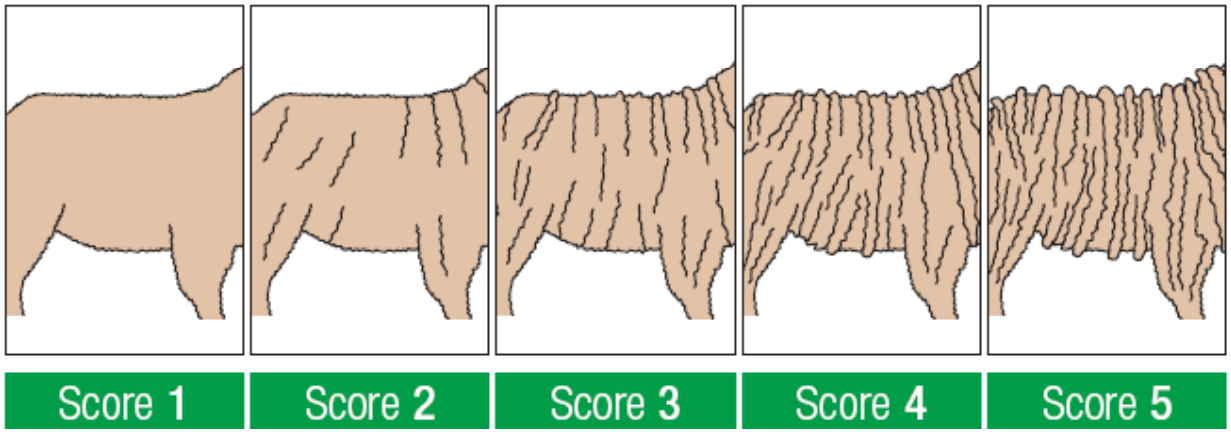
When to score?

Breech wrinkle – Lambs



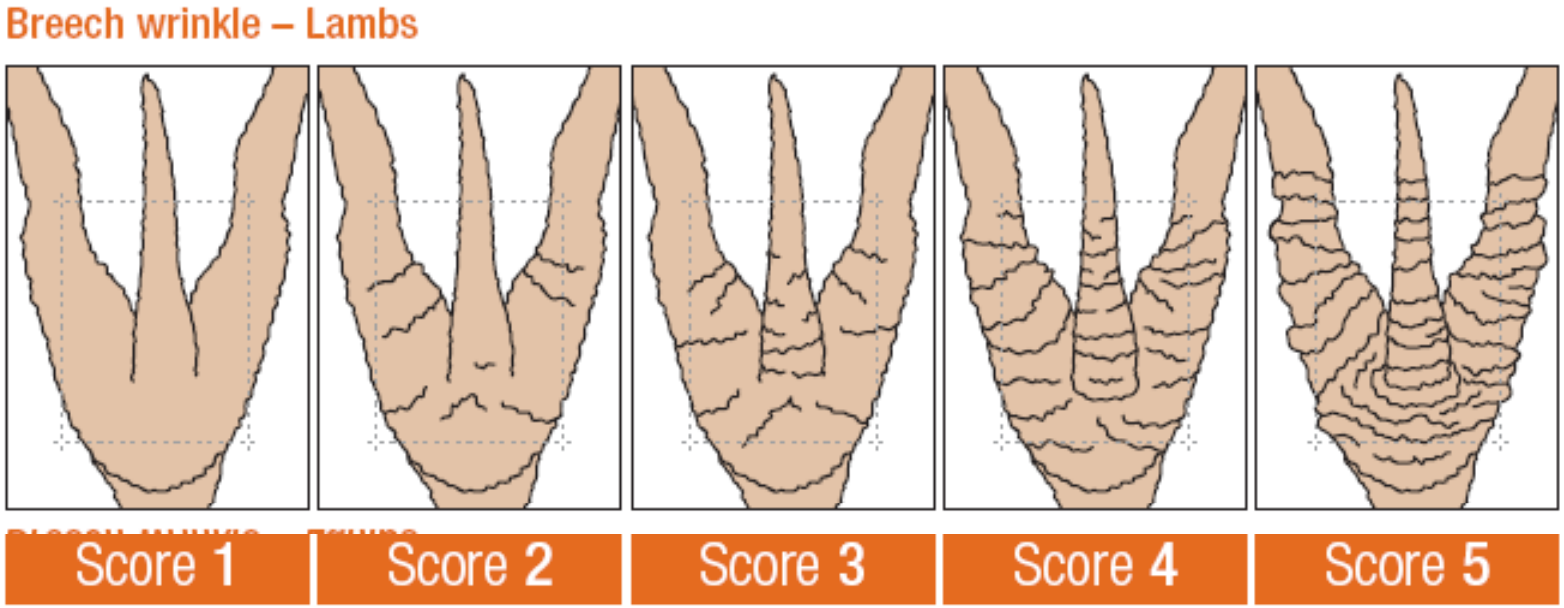
	Breech Wrinkle	Body Wrinkle
Mulesed	Don't score	Lamb marking / off shears
Unmulesed	Lamb marking / off shears	Lamb marking / off shears

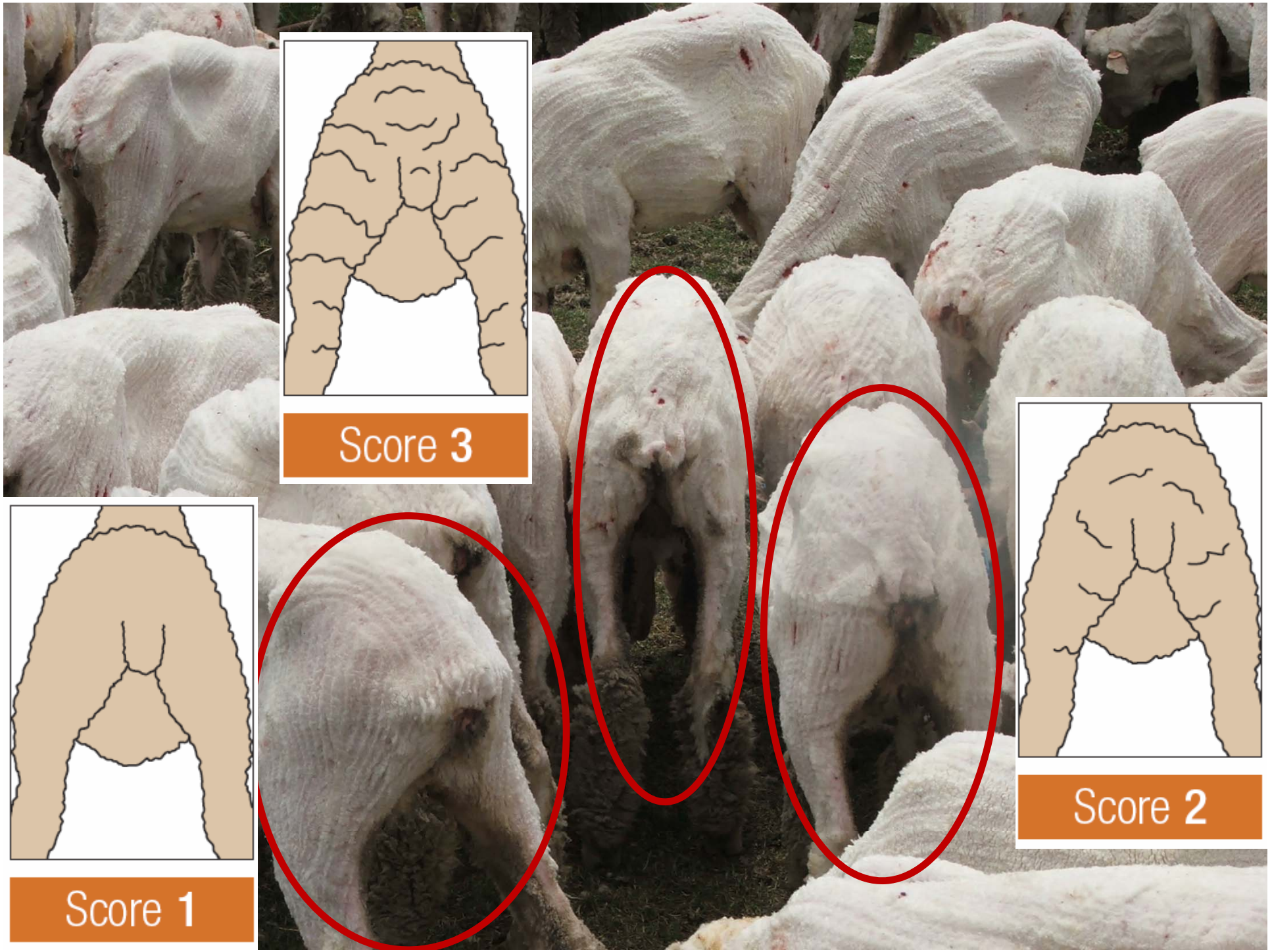
Body wrinkle



awi Australian Wool Innovation Limited

Scoring lambs




Score 3
Score 1
Score 2

Conclusion

- Can score and select for breech traits now
  - There is heritability and genetic variation
  - Can improve breech + production traits together
  - Australian Merinos are becoming plainer
  - As always, a balanced approach to selection required
- Combination of genetics and management for now…
  - reducing intervention over time
  - one part of the non-mulesing package
- **Start scoring breech traits now!**

Australian Wool Innovation Limited


awi
Australian
Wool Innovation
Limited