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Breeding for breech flystrike resistance indicator traits



Introduction

- Breech fly strike is a major problem
- Focus on breeding for resistance through indicator traits has increased
- Wrinkle, wool cover and colour, dags and fleece rot
- Require correlations between indicator and production traits
- Across v within flock effects also an issue

Importance of Visual Traits

- Main goal to increase resistance to breech strike through indirect indicators
- Other goals
 - Robust resilient sheep
 - Increased survival
 - Reduced crutching
 - Reduced reliance on chemicals
 - Improved wool quality
 - Reduced urine stain



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What data is available?

- Sheep Genetics
 - Australia's Genetic evaluation for sheep
 - Data on these new traits
 - Industry data from Merino ram breeders
 - Sheep CRC Information Nucleus flocks
 - Australian Merino Sire Evaluation
 - AWI breech flocks, SA Selection Demonstration Flock, etc



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The Traits

- Fly strike indicator traits
 - Breech wrinkle
 - Breech cover
 - Dags (fecal contamination of breech wool)
 - Wool colour
 - Wool character
 - Fleece rot



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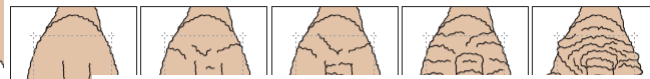


Visual Scoring ~ Breech Traits

Body wrinkle

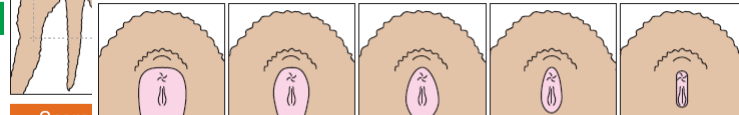


Breech wrinkle – Lambs



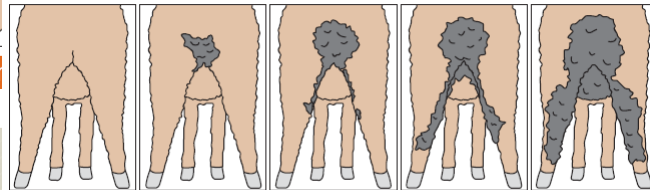
Breech cover

Score 1



Score

Dag



Score 1

Score 2

Score 3

Score 4

Score 5

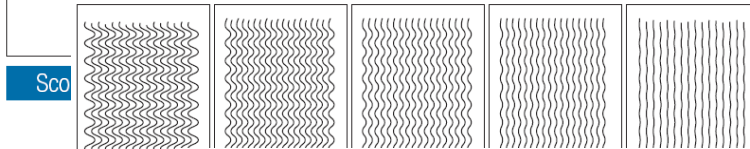


Visual Scoring ~ Wool Traits

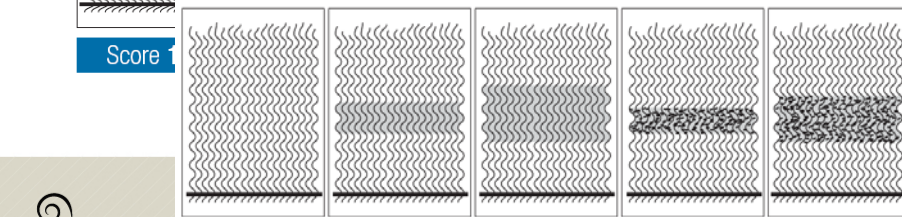
Wool colour



Wool character



Fleece rot



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Score 1

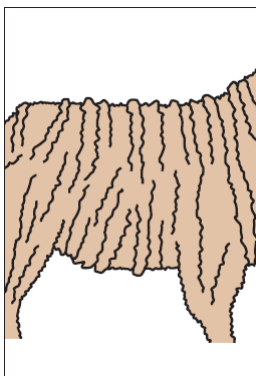
Score 2

Score 3

Score 4

Score 5

“Feed wrinkle”



- What about the effects of environment and nutrition
- Single or twin (-0.3 to -0.5)
- Born in a drought (-0.5 to -1.0)
- From a maiden dam (-0.1 to -0.2)

Need to select for genes, NOT nutrition



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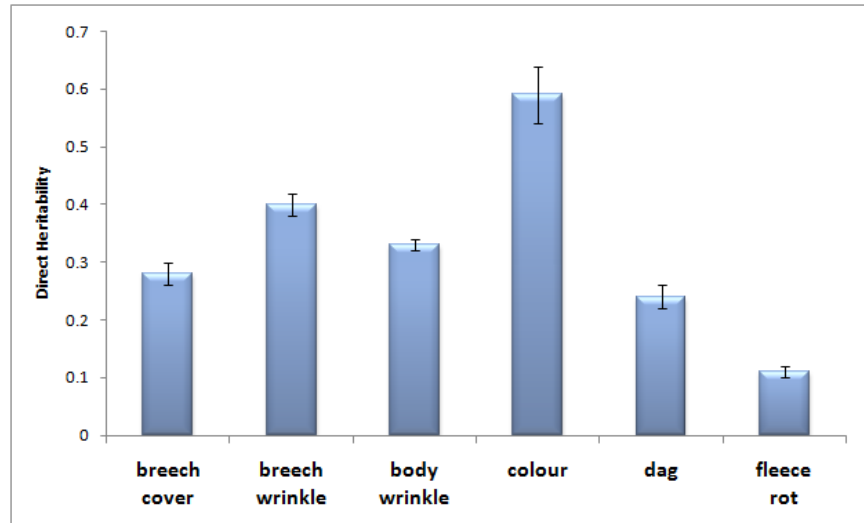
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MEAT & LIVESTOCK AUSTRALIA

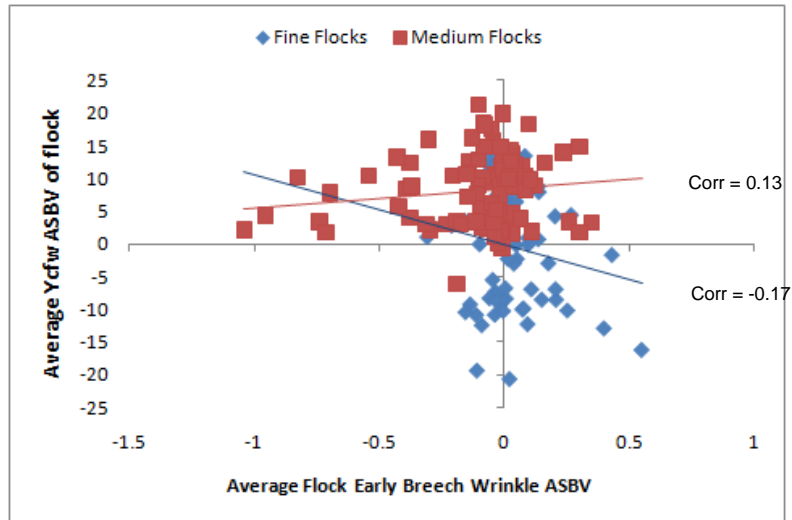
How heritable are these traits?



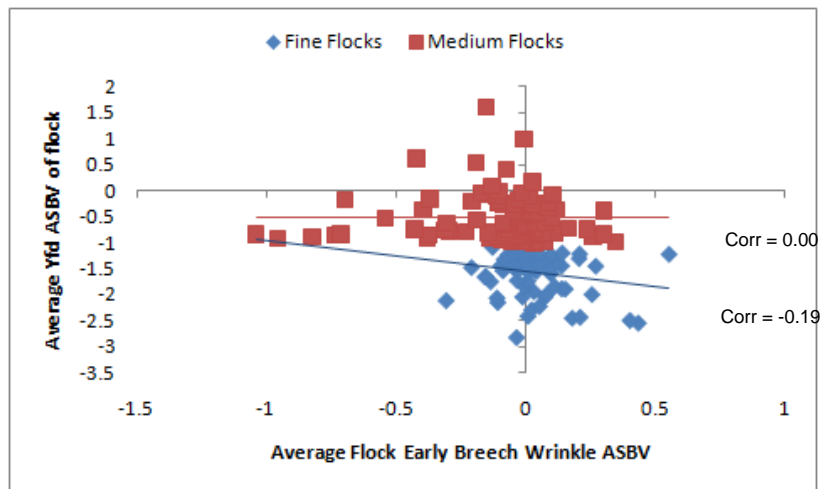
Correlations with breech wrinkle

| Trait | Across Flock | Within Flock | Flock Mean EBV |
|---------------------|----------------|----------------|----------------|
| Body weight | -0.12 ±0.06 | 0.15 ±0.09 | -0.58 |
| Clean fleece weight | 0.21 ±0.06 | 0.30 ±0.10 | -0.27 |
| Fibre diameter | -0.35 ±0.04 | -0.28 ±0.07 | -0.46 |

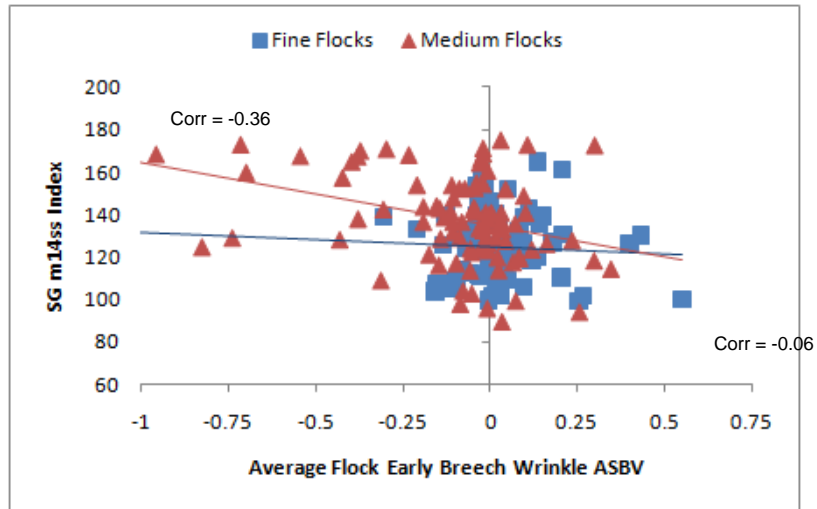
Across Flock Variation ~ Wrinkle & Ycfw



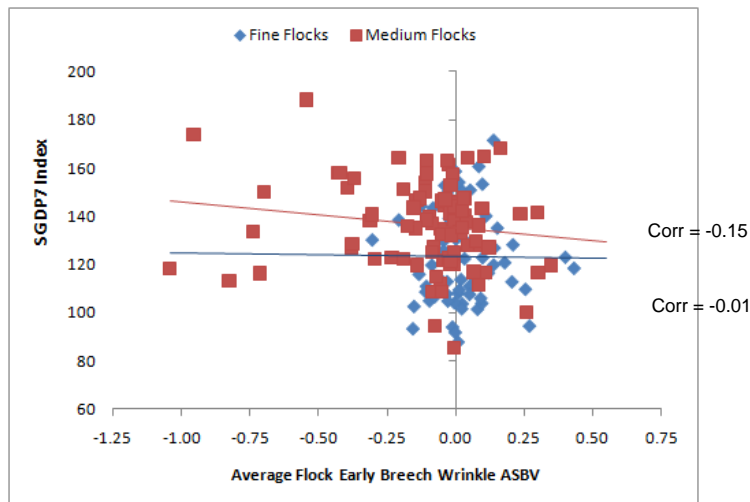
Across Flock Variation ~ Wrinkle and Yfd



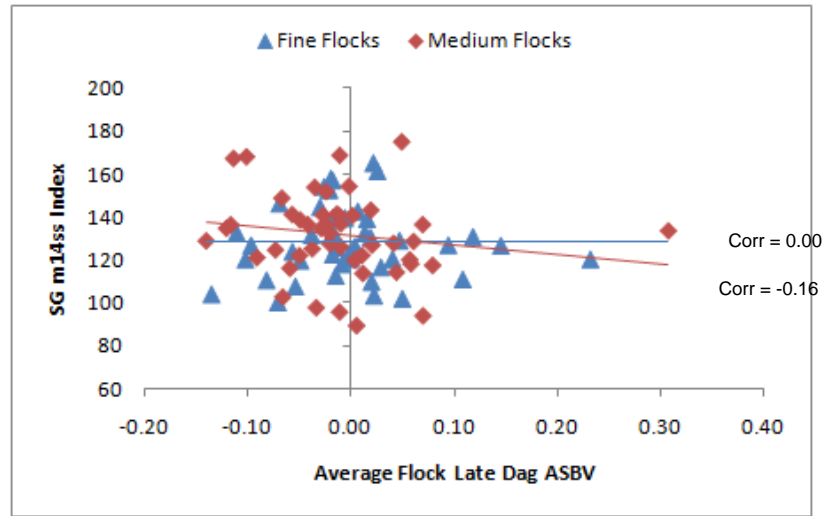
Across Flock Variation ~ Wrinkle & M14SS



Across Flock Variation ~ Wrinkle & DP7



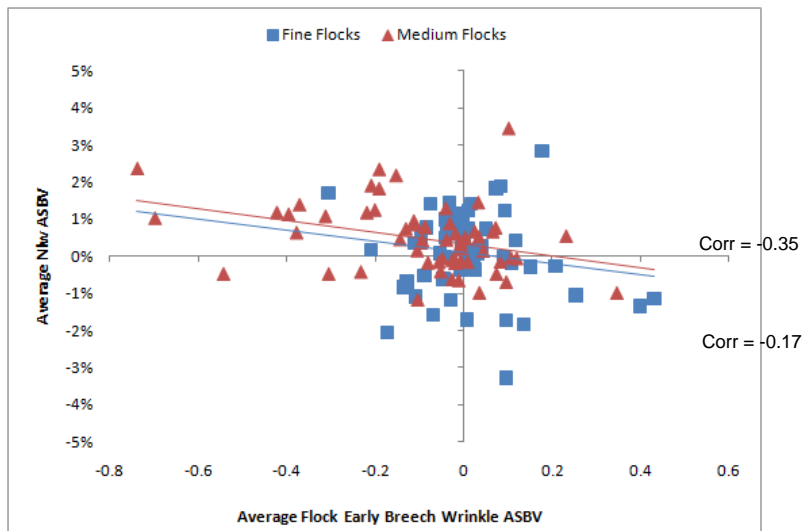
Across Flock Variation ~ Dag & M14SS



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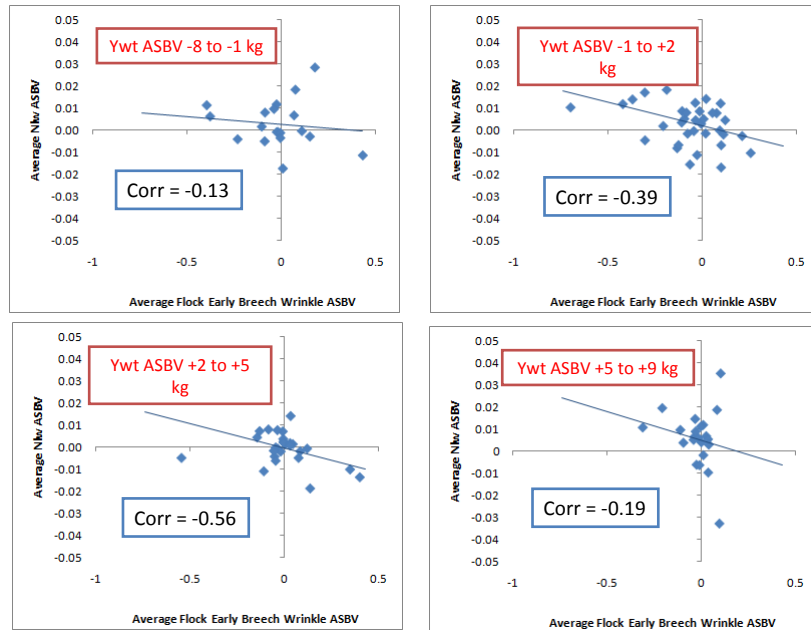
Across Flock Variation ~ Wrinkle & Nlw



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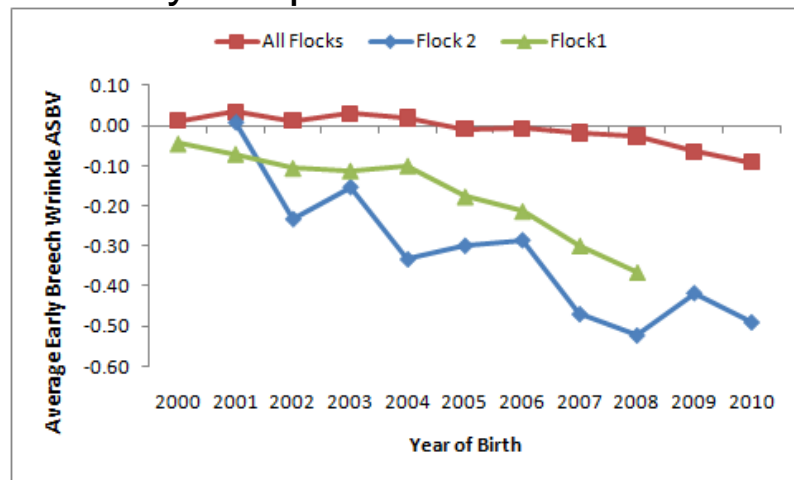


Across Flock Variation ~ Wrinkle & Nlw

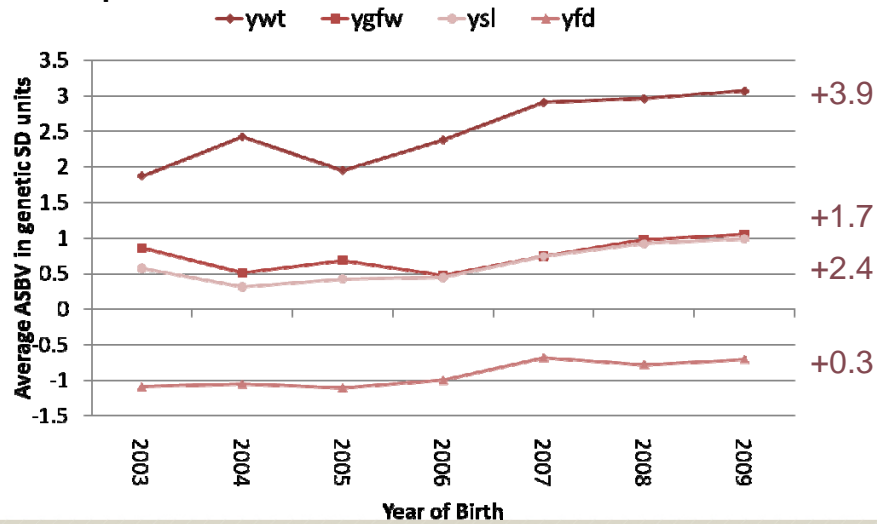


17

Industry Response



Response in other traits for Flock 2



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Conclusions

- Clear differences in across flock and type correlations
- SG Data appears adequate to separate within and across flock effects
- Research flocks have demonstrated power of across flock selection
 - SDF and T13
- Visual trait ASBVs now available via Sheep Genetics



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Conclusions

- Sire selection strategies
 - Already have high indexing, high fleece weight, low wrinkle, low cover sheep and flocks
 - Opportunities already exist for across flock selection to make large improvements
 - Need to balance all traits, Top sires by definition break the correlation averages
 - Will influence the selection responses achieved
 - Multiple predictions required?
 - Care required when selecting across flock



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Acknowledgements



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