



Identifying stress in lambs: an investigation of behavioural measures

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Background



- Increasing need for practical measures of stress in sheep
 - Welfare
 - Productivity
 - Social pressure



Aim



To assess the usefulness of a range of behavioural measurements as indicators of stress in lambs

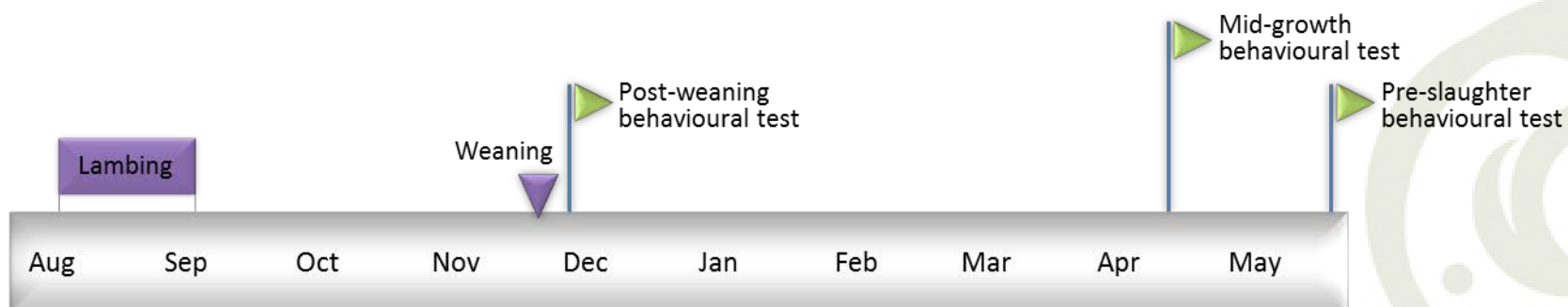
- Practically applicable
- Repeatable over time



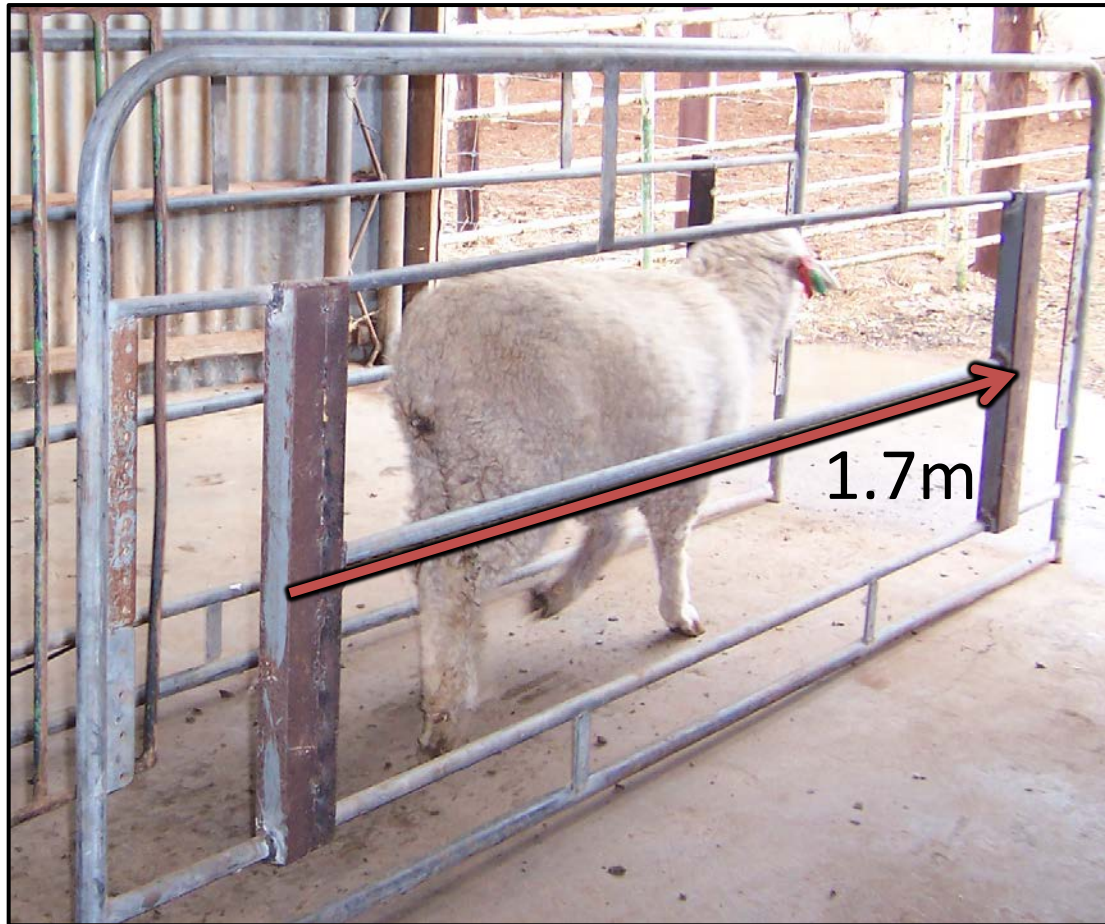
Methods



- 251 Merino based lambs
- Saliva cortisol measured before and after handling at mid-growth and pre-slaughter
- DetectX Cortisol EIA, Arbor Assays
- Analyses in ASReml v.3



Flight speed



Crate Score and CV of Weight



Agitation



Habituation and repeatability



- Reductions in variance over time of up to 31%

	Post-weaning	Mid-growth	Pre-slaughter
Agitation	5.1±0.5	4.4±0.5	3.5±0.4

- Greater repeatability between mid-growth and pre-slaughter
 - Shorter interval
 - Older lambs = more consistent behaviour

	Post-weaning to mid-growth	Mid-growth to pre-slaughter	Post-weaning to pre-slaughter
Flight speed	0.39±0.07	0.54±0.06	0.37±0.06

Flight Speed



- Most repeatable behavioural measures
 - Objective 0.37 - 0.54
 - Subjective 0.34 – 0.56
- Strong correlations (0.80 - 0.83) between objective and subjective measures



Crate Score and CV of Weight



- Moderately repeatable
 - Crate score 0.11 – 0.34
 - CV of weight 0.18 – 0.40
- Moderate (0.46) to strong (0.68) correlations between crate score and CV of weight
- Moderate correlations (0.18 - 0.41) with flight speeds from mid-growth



Agitation



- Moderately repeatable (0.24 – 0.35)
- Weakly correlated at best (<0.24) with other behaviours



Saliva cortisol



- Only agitation showed a significant relationship with saliva cortisol:
 - Lambs which were more active in the isolation box exhibited lower post-handling cortisol levels.
 - Beausoleil et al. 2008: sheep selected for higher activity level in the agitation test had significantly lower plasma cortisol after handling





Conclusions

- Flight speed
 - Reliable at any age
 - Practical and low cost
- Crate score and CV of weight
 - Reliable in older lambs
 - Practical and low cost
- Agitation
 - Different aspect of reactivity
 - Suitable only in a research context



Acknowledgements



- Supervisors
 - Wayne Pitchford
 - Susan Hazel
 - Janelle Hocking Edwards
- Assistance
 - SARDI Struan Agricultural Centre
- Funding
 - Sheep CRC
 - Meat and Livestock Australia
 - University of Adelaide

