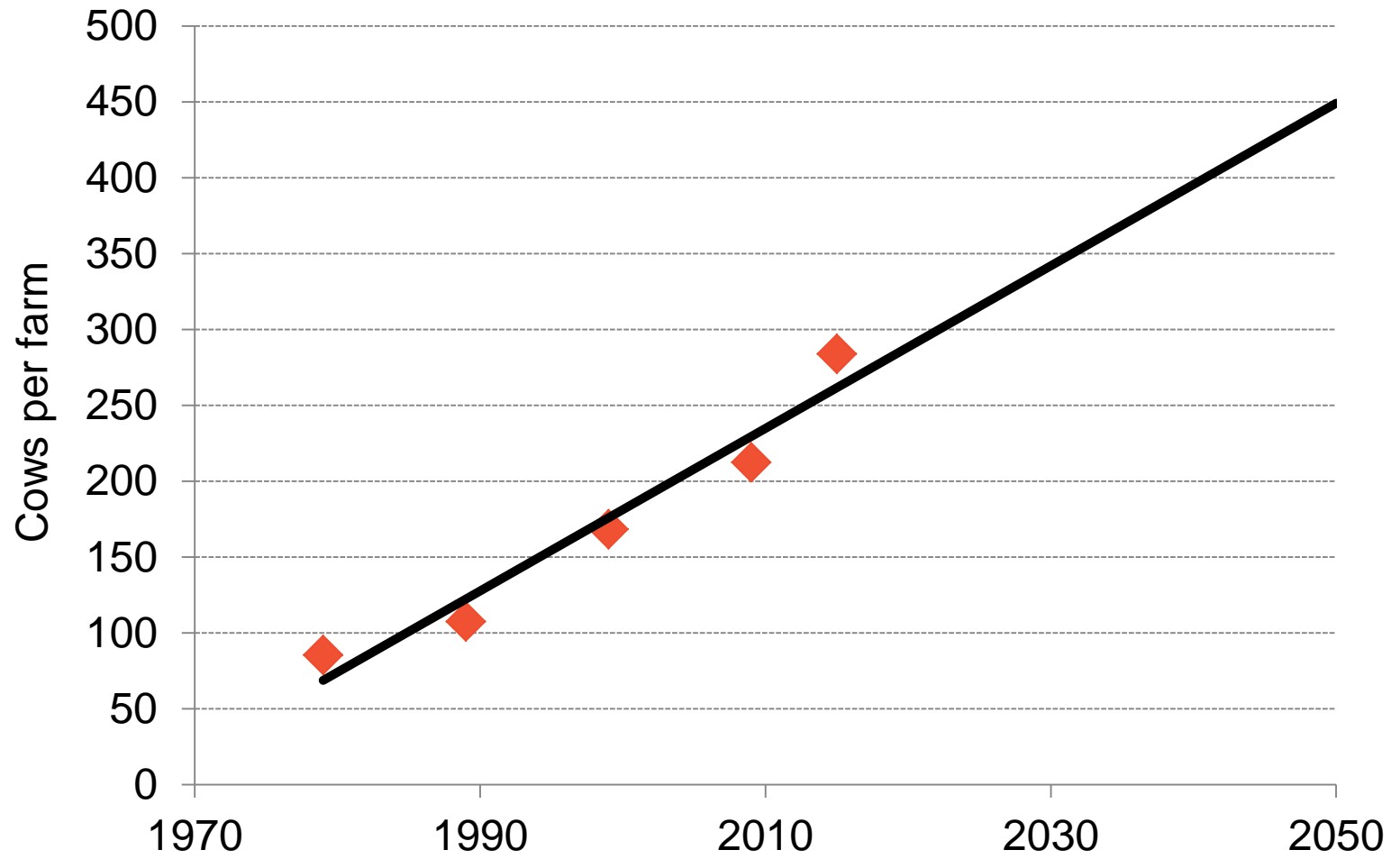


Remote monitoring of dairy cattle: Opportunities for improved welfare across all species

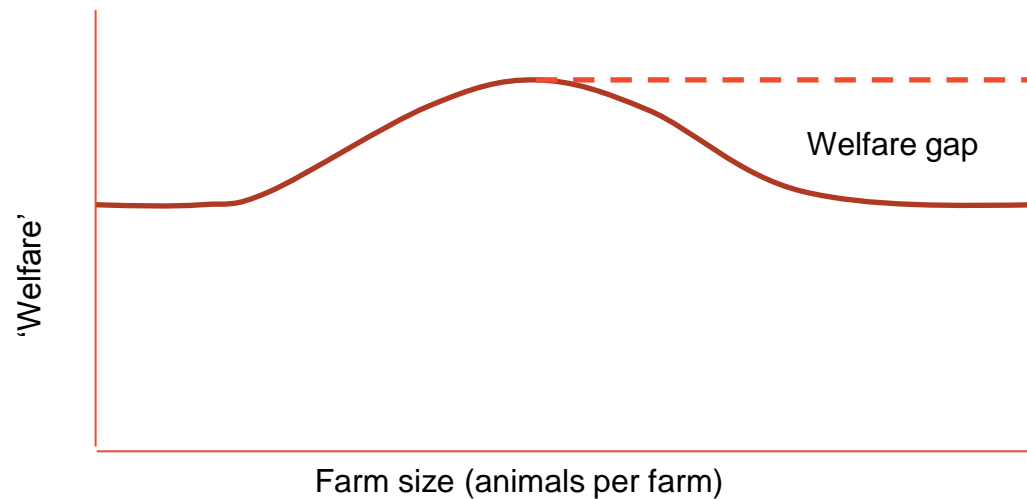
Dr Cameron Clark and Dr Sabrina Lomax
Dairy Science Group,
The University of Sydney,
Camden, NSW, 2570
cameron.clark@sydney.edu.au





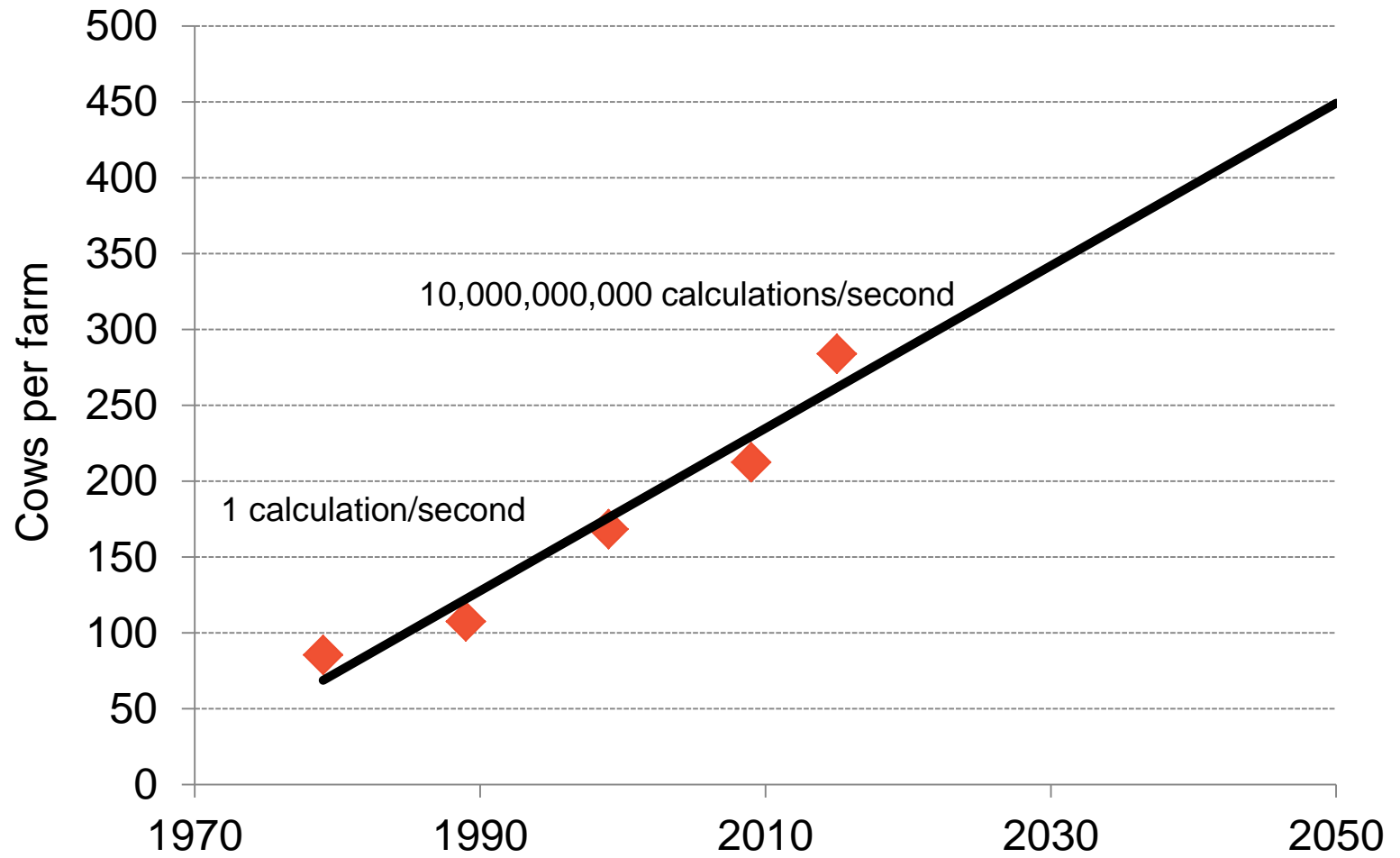
Fraser (2005) (FAO)

- Are larger and/or corporately owned units worse for animal welfare?

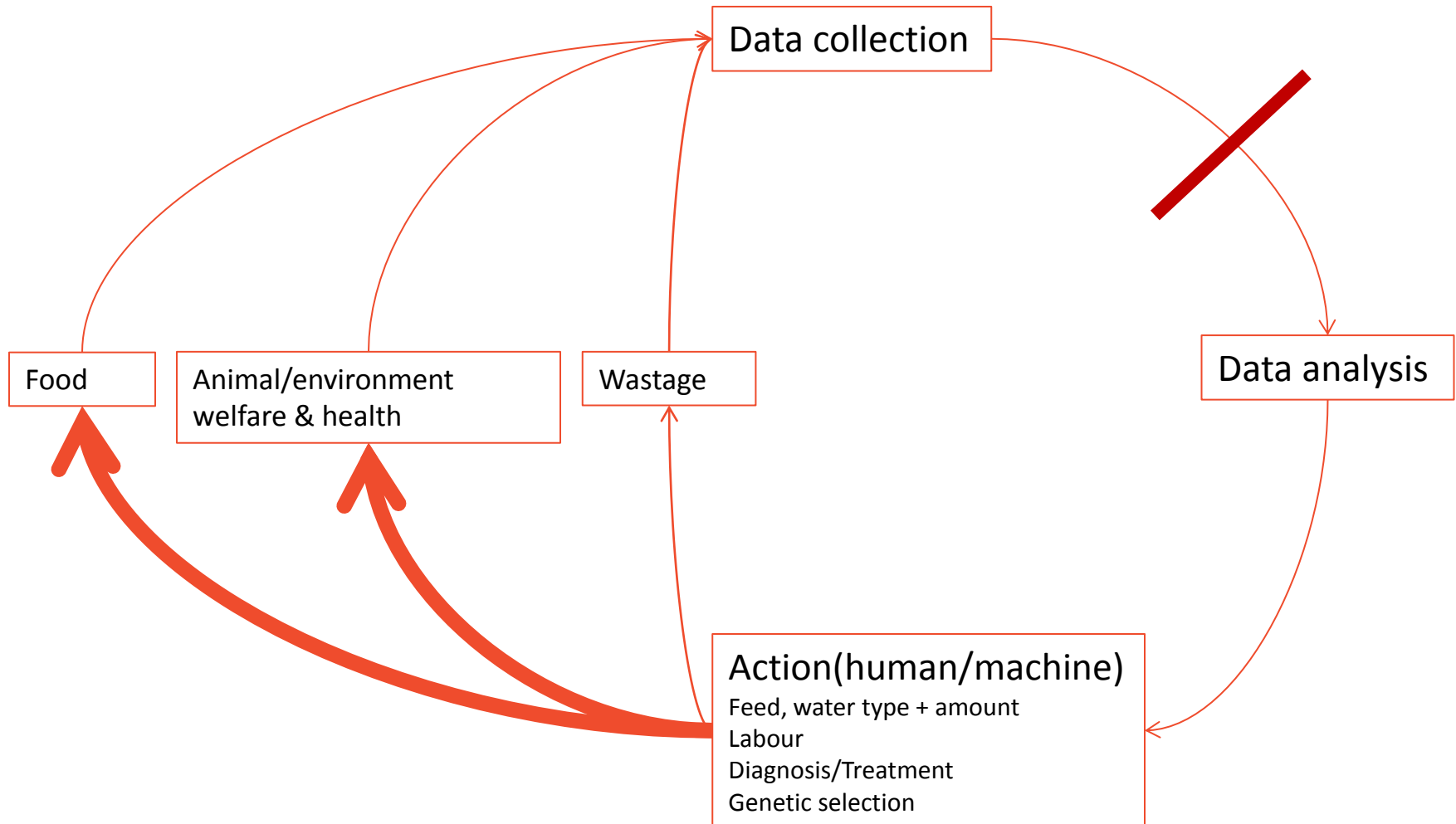


Time bucket and quality of that time



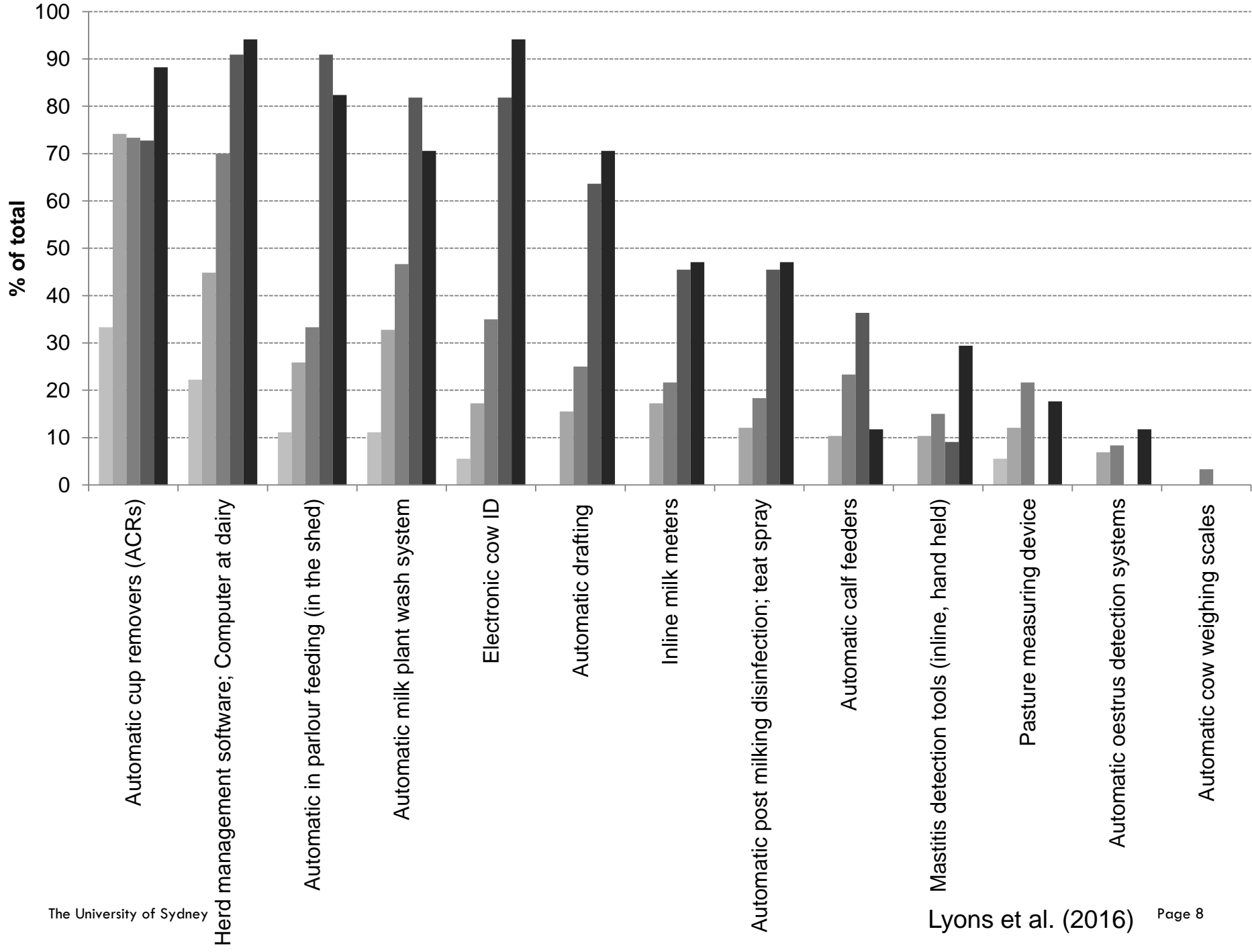


The bleeding edge of dairy farming



‘The speed of technological advancement has outpaced (by a long way) our ability to turn data into better actions on farm’

(C. Clark, EAAP 2016)

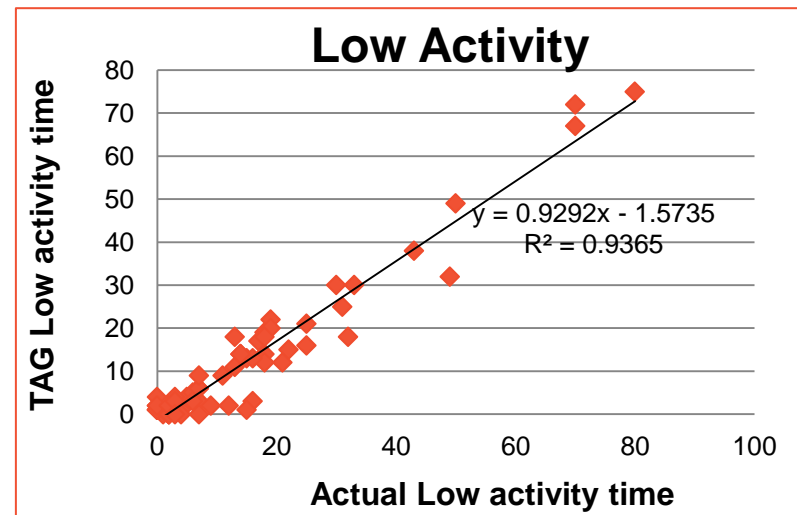
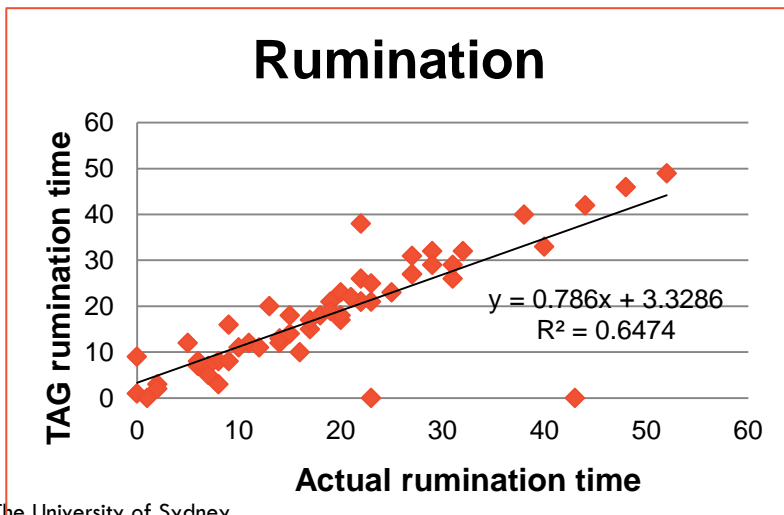
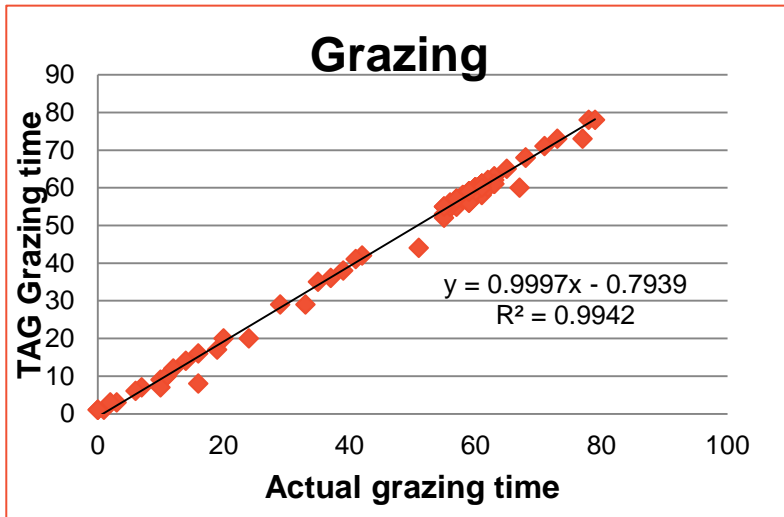


Data from new technology: Health phenotypes

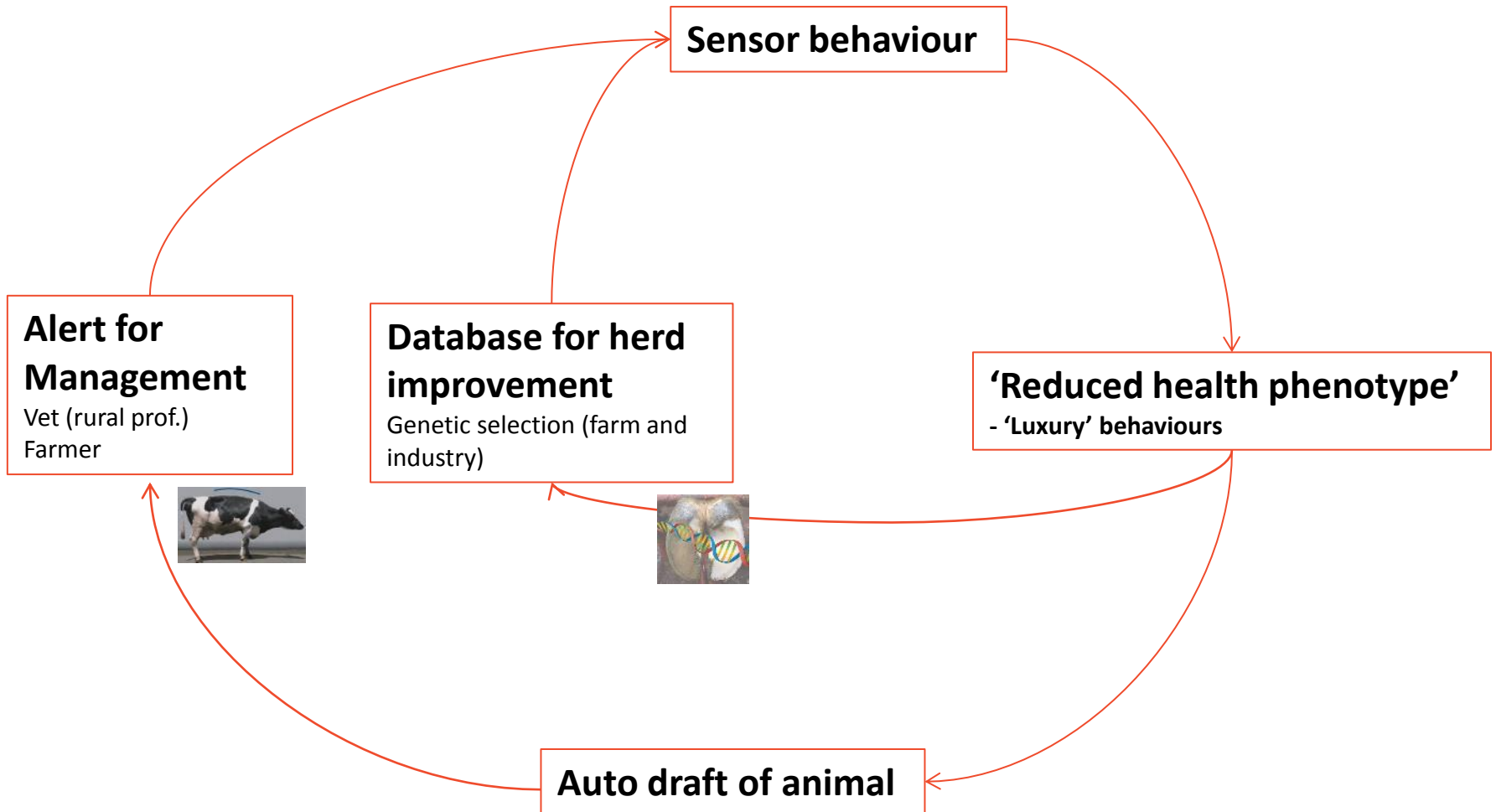
Obtaining real-time 24 h behaviour of dairy cattle at a 'minute' level is available to research (and for commercial farms) now.



Data from new technology: Health phenotypes

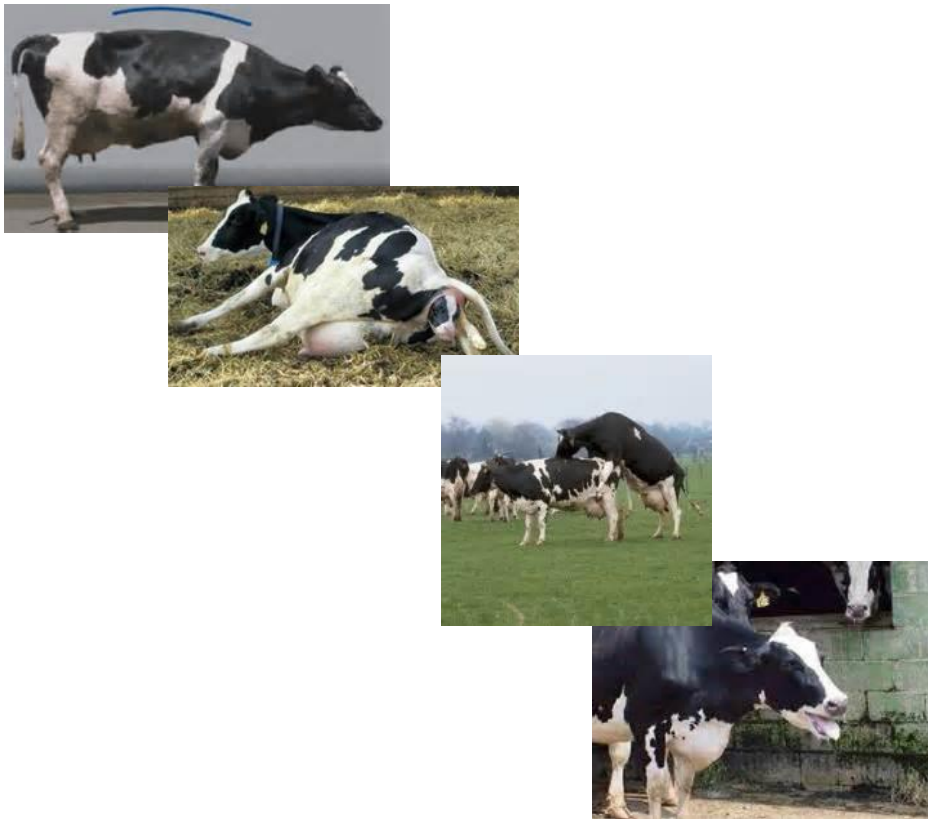


Data from new technology: Health phenotypes



'Health phenotypes'

- Behaviour phenotype



'Oestrus phenotype'



'Oestrus phenotype'



Theriogenology 83 (2015) 739–748



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Evaluation of infrared thermography body temperature and collar-mounted accelerometer and acoustic technology for predicting time of ovulation of cows in a pasture-based system



S. Talukder^{a,*}, P.C. Thomson^b, K.L. Kerrisk^a, C.E.F. Clark^a, P. Celi^a

^aDairy Science Group, Faculty of Veterinary Science, The University of Sydney, Camden, New South Wales, Australia

^bReproGen–Animal Bioscience Group, Faculty of Veterinary Science, The University of Sydney, Camden, New South Wales, Australia



'Oestrus phenotype'



- Standing to be mounted
- Interval
- Duration
- Intensity
- Expression of behaviours...?
- Interaction herd mates

'Calving phenotype'



'Calving phenotype'

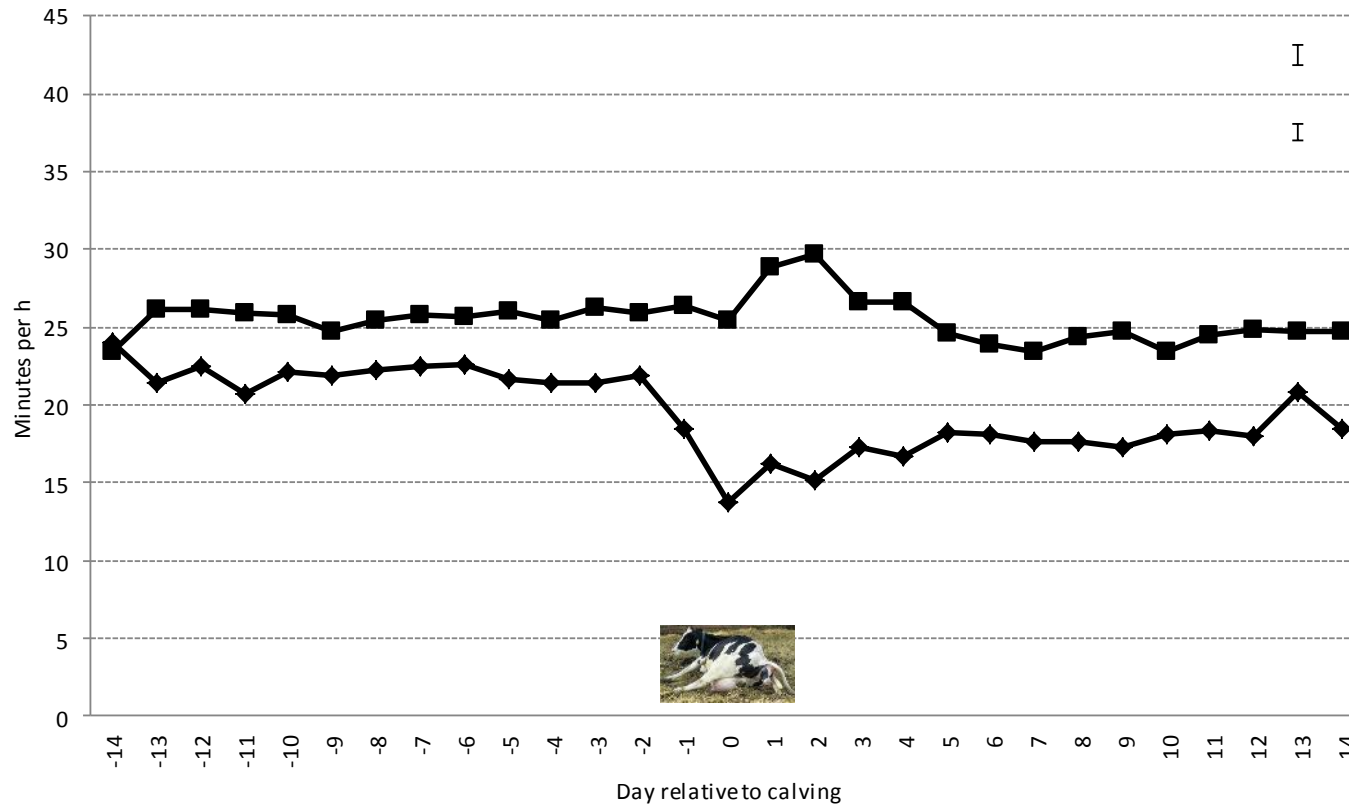
Animal (2015), 9:4, pp 691–695 © The Animal Consortium 2014
doi:10.1017/S1751731114003127



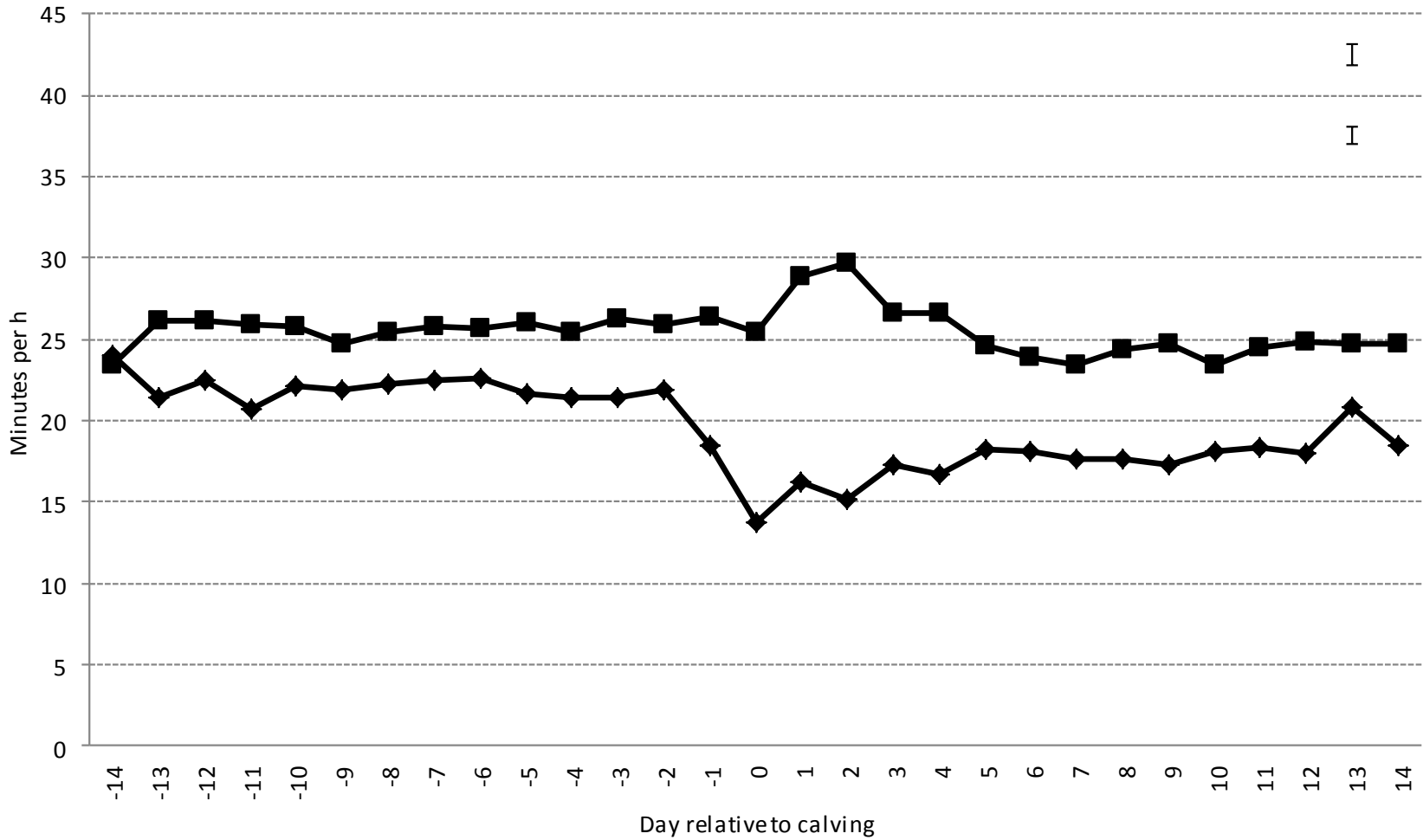
Rumination and activity levels as predictors of calving for dairy cows

C. E. F. Clark^{1†}, N. A. Lyons², L. Millapan³, S. Talukder¹, G. M. Cronin¹, K. L. Kerrisk¹ and S. C. Garcia¹

¹Dairy Science Group, University of Sydney, Camden 2570, NSW, Australia; ²Dairy and Intensive Livestock Industries, NSW Department of Primary Industries, Elizabeth Macarthur Agricultural Institute, Menangle NSW 2568, Australia; ³Department of Animal Production, Faculty of Agronomy, University of Buenos Aires, Buenos Aires 1417, Argentina



'Transition cow phenotype'



‘Lameness phenotype’

School of Engineering and Faculty of Veterinary Science collaboration

PhD: *“Advanced Perception in Precision Livestock Robotics: Lameness”*

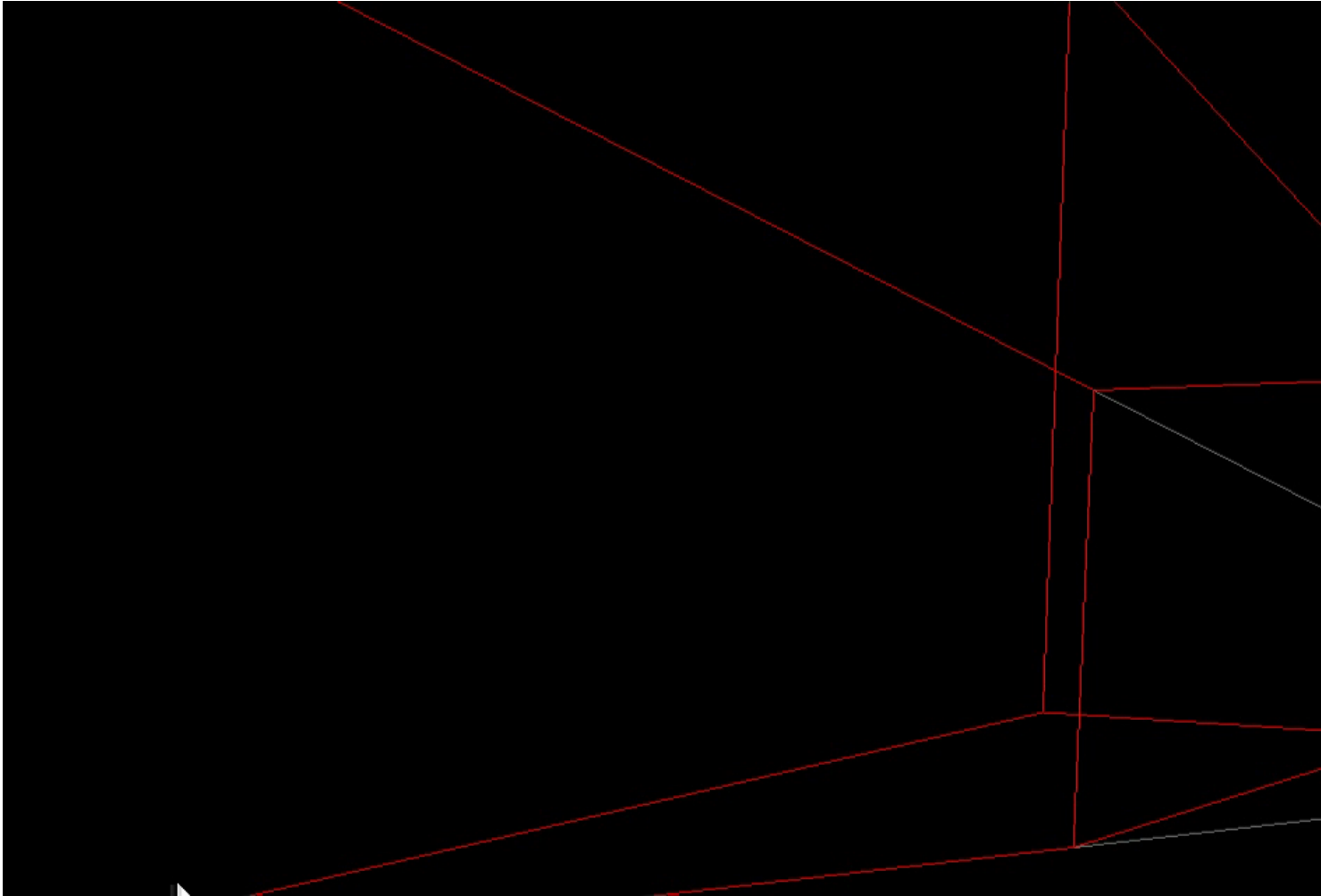


THE UNIVERSITY OF
SYDNEY



**Dairy
Australia**

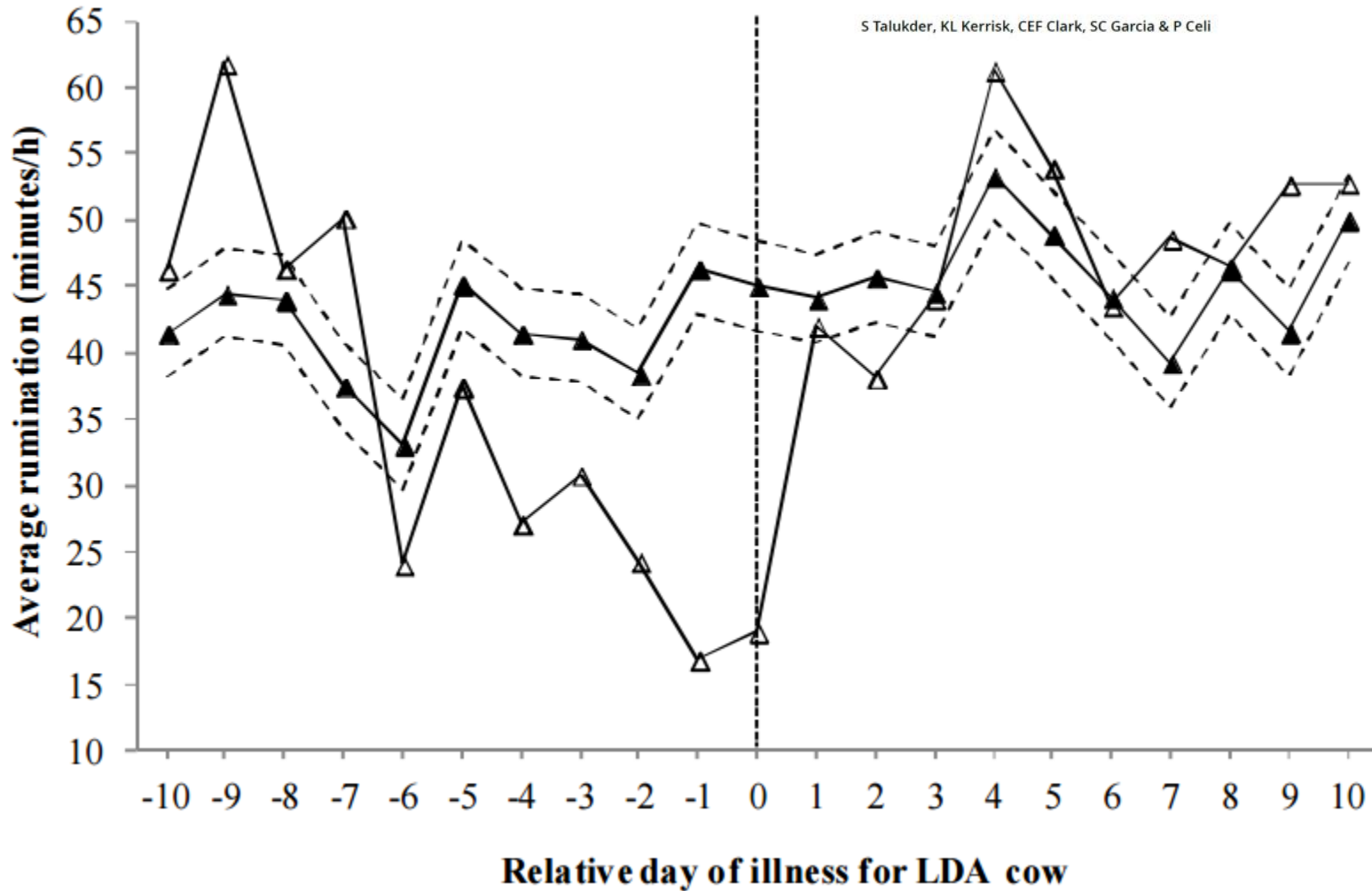
Your Levy at Work



'LDA phenotype'

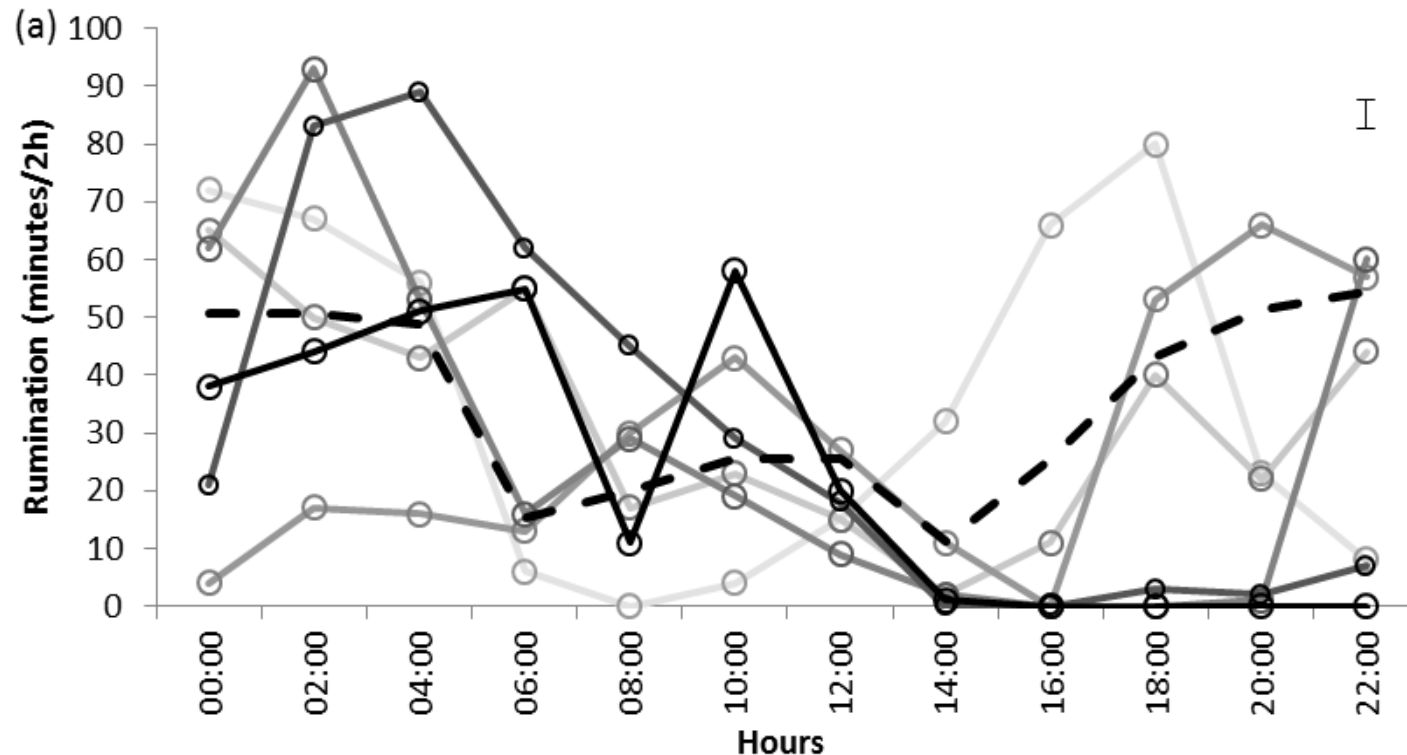
Rumination patterns, locomotion activity and milk yield for a dairy cow diagnosed with a left displaced abomasum

S Talukder, KL Kerrisk, CEF Clark, SC Garcia & P Celi



3 day sickness: Bovine Ephemeral Fever

- Viral disease
- Fever, muscle stiffness, lameness
- Tolfedine (antiinflam)
- Heat stress and rumination time (Moallem et al., 2010)
- Sensitivity heat of the day

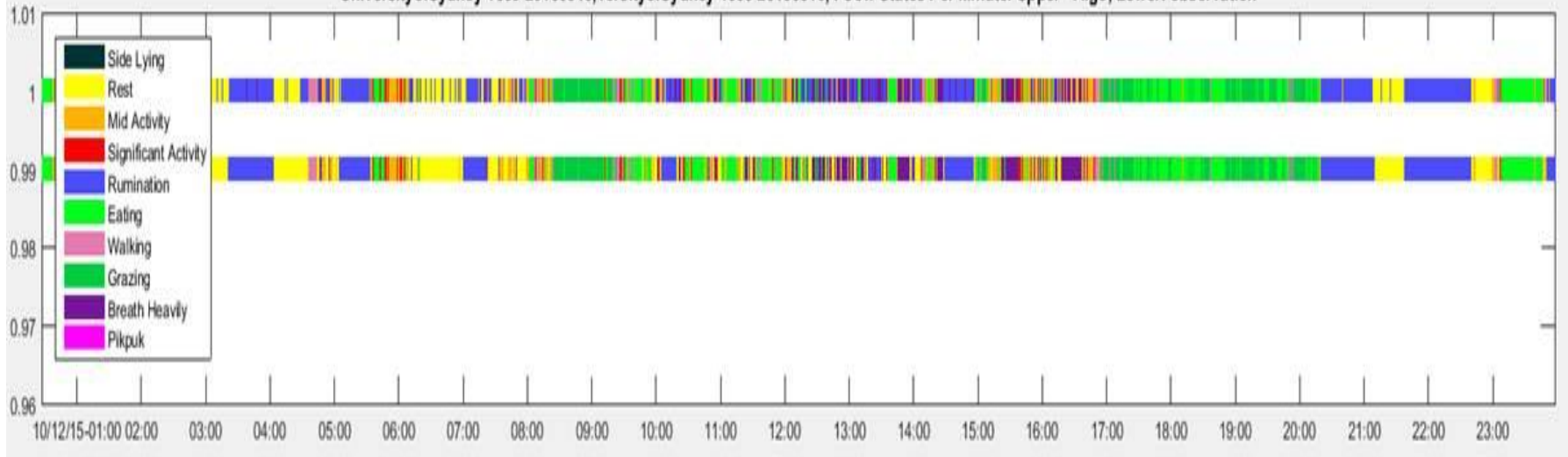


Samson et al *unpub data*

Opportunities/current work: Dairy; Beef Cattle; Poultry

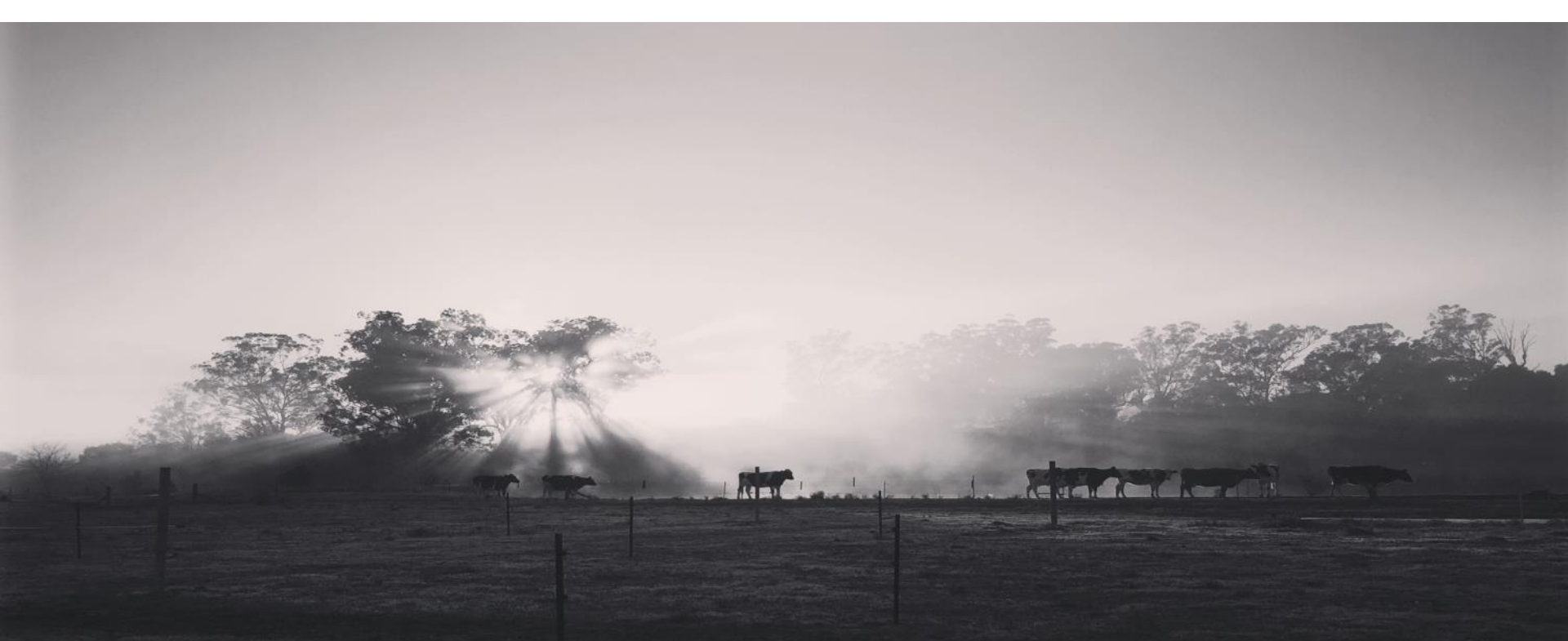
Production animal time allocated to core or luxury behaviours

UniversityofSydney 1669 20160510, versityofSydney 1669 20160510, : Cow States Per Minute. Upper - Algo, Lower: observation



Group vision: Forward to the past





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			Lameness	Parity	DIM
	Non lame	Lame			
Milk yield (L/day)	21	15	<0.001	<0.001	<0.001
Rumination (min/day)	445	457	0.163	<0.001	<0.001
Activity (units/ day)	478	441	<0.001	<0.001	<0.001