

# Effects of beef cattle temperament on feed and water intake

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## Introduction

- Temperament scoring systems encompass a variety of subjective and objective methods
- Chute scoring is a subjective method often used by breed associations in genetic evaluations
- The most commonly used objective method is exit velocity, which is calculated from the amount of time it takes for an animal to cross 1.83 meters when exiting the working chute.
- Measurements of temperament collected using both objective and subjective methodologies have been shown to be heritable, and are associated with differences in cortisol levels and average daily gain in the scientific literature (Curley et al. 2006).
- The relationships between temperament and water intake has not been evaluated

## Objective

- Evaluate the relationship between beef cattle temperament and feed and water intake

## Experimental Procedures

- Five objective (exit velocity; EV) and subjective (chute scores; CS) temperament measurements were collected on 106 beef steers every 2 weeks over a 70 day feed and water intake test conducted from June 16, 2016 to August 11, 2016 (MeanFI and MeanWI for feed and water intake, respectively)
- CS were collected by a trained observer using the scoring system outlined in Table 1 and averaged across timepoints
- EV was calculated using time required for an animal to move 1.83 meters when exiting the chute as recorded by two sets of electronic eyes (FarmTek) and averaged across timepoints (Figure 1)
- Entry scores were collected as a control variable and reflected the mechanisms used to encourage the steers to enter the chute
- Daily feed and water intakes on each animal (including length of each intake event, number of events/day, and intake amount) were recorded using an Insentec system and were averaged over the 70 day intake period
- Data were analyzed using SAS version 9.4
- Effect of temperament (MeanCS, MeanEV averaged over 5 timepoints) on MeanFI and MeanWI was evaluated using a general linear model
- Pearson and Spearman correlations were generated to evaluate the consistency of measurements between timepoints and to test whether reranking of animals between timepoints occurred

## Results

Table 1. Chute scoring system

1	Calm, no movement
2	Restless shifting
3	Head throwing, squirming and occasionally shaking the chute
4	Violently and continually shaking the squeeze chute

Table 2. Spearman correlations between CS and EV at different timepoints

Trait*	CS1	CS2	CS3	CS4	CS5	EV1	EV2	EV3	EV4	EV5
CS1	1	0.37*	0.41*	0.12	0.37*	0.22*	0.18	0.16	0.03	0.18
CS2	0.37*	1	0.47*	0.47*	0.32*	0.11	0.17	0.20*	0.20	0.14
CS3	0.41*	0.47*	1	0.58*	0.37*	0.19	0.32*	0.34*	0.32*	0.14
CS4	0.12	0.47*	0.58*	1	0.49*	0.40*	0.32*	0.30*	0.33*	0.26
CS5	0.37*	0.32*	0.37*	0.49*	1	0.30*	0.23*	0.21*	0.27*	0.31*
EV1	0.22*	0.11	0.19	0.40*	0.30*	1	0.53*	0.53*	0.54*	0.52*
EV2	0.18	0.17	0.32*	0.32*	0.23*	0.53*	1	0.61*	0.67*	0.50*
EV3	0.16	0.20*	0.34*	0.30*	0.21*	0.53*	0.61*	1	0.66*	0.57*
EV4	0.03	0.20	0.32*	0.33*	0.27*	0.54*	0.67*	0.66*	1	0.53*
EV5	0.19	0.14	0.14	0.26	0.31*	0.52*	0.50*	0.57*	0.53*	1

\*P < 0.05

Table 3. Distribution of chute scores

Trait*	1	2	3	4
06/16/2016	50	30	18	3
06/30/2016	41	37	15	0
07/14/2016	51	38	12	3
07/28/2016	35	16	5	0
08/11/2016	64	34	7	0

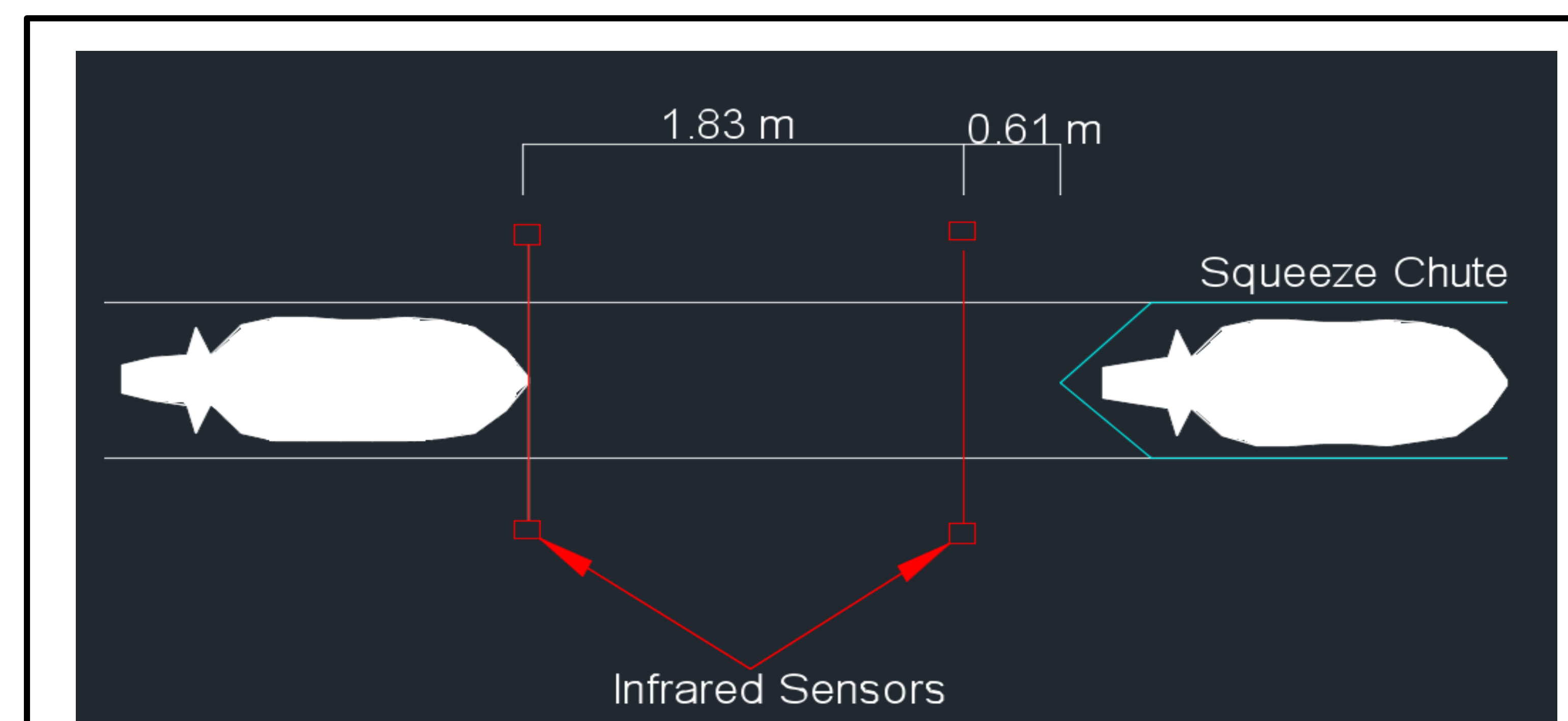
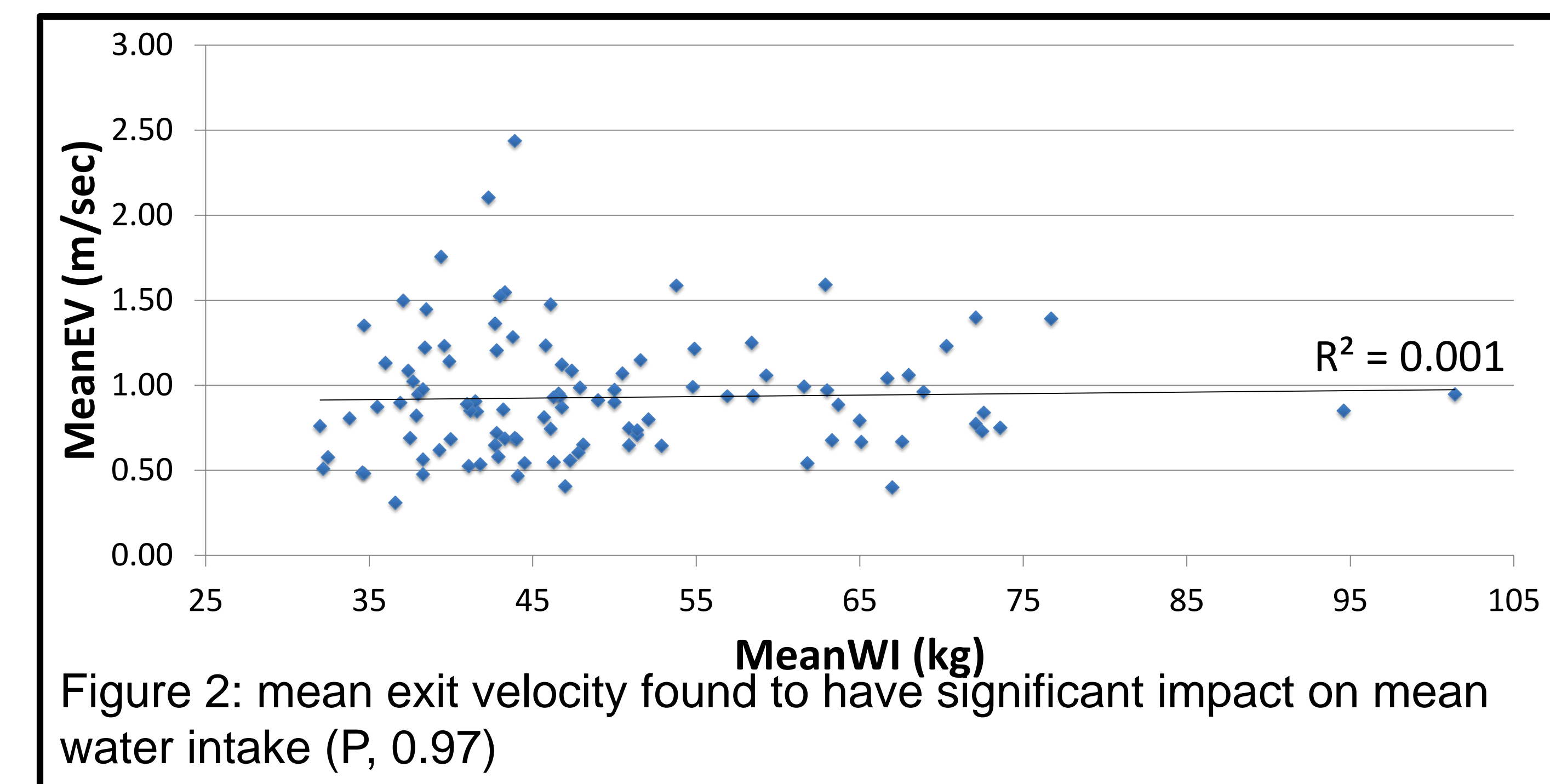


Figure 1: Schematic placement of infrared sensors for exit velocity in relation to chute placement



## Conclusions

- Correlations of SC and EV between timepoints were moderate to high (Table 2)
- Chute scores and exit velocities did not have a significant impact on MeanFI and MeanWI (P > 0.05)
- Failure to detect a significant effect of temperament on feed or water intake may be due to the distribution of temperament in these cattle, as most tended to be fairly docile (Table 3)
- Spearman correlations were relatively low to moderate, but tended to be higher than Pearson correlations, indicating that there is substantial re-ranking, but there is less re-ranking than might be expected based on Pearson correlations

## Implications and Future Work

- If temperament has an impact on feed or water intake, it is important to understand that relationship to help with management decisions in the feedlot as well as on cow/calf operations when feed and water may be scarce
- These analyses should be replicated in a population with greater variation in temperament to better evaluate the relationship with feed and water intake

## References

- Curley, K.O. & Paschal, Joe & H. Jr Welsh, T & Randel, Ronald. (2006). Technical note: Exit velocity as a measure of cattle temperament is repeatable and associated with serum concentration of cortisol in Brahman bulls. *Journal of Animal Science*. 84. 3100-3.



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