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RELATIONSHIPS BETWEEN COW AND CALF TEMPERAMENT AND LIVE ANIMAL BODY COMPOSITION TRAITS IN BEEF CALVES

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Background. The economic implications associated with livestock temperament have not been fully determined (Grandin, 1994). Within the cattle industry we have daily interactions with cattle that are influenced by the temperament of the animal. Many concerns can arise, which include animal handler safety, damage to equipment and facilities, injury to the animal, etc. Several studies have reported reduced animal productivity related to temperaments (Voisinet et al., 1997).

The objectives of this study were to evaluate effects of breed of sire, and gender on exit velocity (EV, m/s), chute temperament score (CS) and pen temperament score (PS) and measure relationships between EV, CS and PS and live animal body composition traits at weaning.

Research Findings. Angus crossbred calves (n=113) were assigned a pen score (scale of 1 to 5, with 1=non-aggressive, not excited by humans or facilities; to 5=very aggressive, excited, runs into fences, "combative"); calves were weighed on a platform scale and assigned a chute score. Calves were released into a hydraulic squeeze chute and restrained, while in the squeeze chute a blood sample was collected and serum harvested for analysis of cortisol concentrations. Exit velocity was measured using a laser-timing device (FarmTek) over approximately 1.83 m from the chute (m/s). Measurements occurred at weaning and sire consisted of one Brangus (BN) sire and six Angus (AN) sires. Least square means were obtained from the PROC MIXED procedure of SAS (SAS Institute, 2001) with main effects of sire breed and gender. Breed of sire (AN or BN) was not a significant source of variation for EV or PS. Heifers had greater EV and a higher PS. Cow EV was not influenced by dam breed or age of dam. The correlation coefficient (r) between calf EV and cow EV was 0.34 ($P < 0.002$); calf EV and cortisol was 0.21 ($P < 0.03$); calf EV or PS was 0.26 ($P < 0.006$). Individual sire did influence CS, weaning weight, weight per day of age, and body composition traits at weaning. The r for PS and body composition traits for ribeye area, back fat, ribeye area per hundred weight (cwt) and rump fat were 0.21, 0.25, 0.21, 0.25, respectively ($P < 0.03$).

Application. Breed of sire was not a significant source of variation in chute exit velocity; however, differences existed between steers and heifers. Sire and gender of calf did influence body composition traits at weaning. The moderate association between measurements of temperament and body composition would suggest that larger calves tended to be faster and less calm. Although correlation coefficients between exit velocity and temperament score were

significantly different from zero, the magnitudes were only moderate. In this case, dam EV had the strongest correlation with calf EV. This would indicate that selection for EV within the cow herd would improve temperament of the calves produced.

Table 1. Mean exit velocity for chute and pen scores at weaning.

Pen Score	Exit Velocity (m/s)	Chute Score	Exit Velocity (m/s)
1 (n=1)	0.99 ± 0.99^{w}	1 (n=18)	2.52 ± 0.24
2 (n=31)	1.91 ± 0.18^{w}	2 (n=53)	2.28 ± 0.14
3 (n=50)	2.28 ± 0.14^{x}	3 (n=38)	2.08 ± 0.17
4 (n=26)	2.67 ± 0.19^{y}	4 (n=1)	2.77 ± 1.02
5 (n=2)	2.13 ± 0.70^{wxy}	5 (n=0)	

^{wxy}Means with different superscripts within the columns differ $P < 0.01$.

Table 2. Mean differences between steers and heifers for production measurements at weaning.

Item	Steers	Heifers	P-value
Weaning Weight (kg)	250.21 ± 5.29	229.68 ± 4.9	< 0.001
Weight per day age (kg)	1.16 ± 0.04	1.07 ± 0.03	< 0.001
Ribeye area (cm^2)	51.39 ± 1.43	50.41 ± 1.33	NS
Back fat (cm)	0.24 ± 0.03	0.38 ± 0.02	< 0.001
Ribeye area per cwt	1.33 ± 0.03	1.42 ± 0.03	< 0.006
IMF (%)	2.23 ± 0.10	2.95 ± 0.09	<0.001
Rump fat (cm)	0.31 ± 0.03	0.44 ± 0.02	< 0.001
Pen Score	2.7 ± 0.17	3.2 ± 0.15	< 0.02
Chute Score	2.3 ± 0.13	2.3 ± 0.13	NS
Exit velocity (m/s)	1.80 ± 0.21	2.53 ± 0.19	< 0.001
Cortisol (mg/ml)	35.90 ± 3.38	50.24 ± 3.15	< 0.001