

80 Relationships between temperament, carcass traits and tenderness in Santa Gertrudis steers. F. R. B. Ribeiro*¹, G. E. Carstens¹, R. K. Miller¹, E. G. Brown², and P. A. Lancaster¹, ¹Texas A&M University, College Station, ²Stephen F. Austin University, Nacogdoches, TX.

Objectives of this study were to determine the relationships between temperament, carcass traits and tenderness in finishing steers. Santa Gertrudis steers (n = 113) fed a high-grain diet (ME = 3.0 Mcal/kg) were used. Exit velocity (EV), an objective assessment of temperament, was measured on d 0 and 70 of the study as rate of distance traveled while exiting from a chute. Cattle were harvested in two groups at a compositional endpoint of one cm 12th rib fat thickness (BF). After a 24 h chill, a 50-g sample was collected from the longissimus dorsi (LD) muscle to determine calpastatin activity. After a 48-h chill carcass characteristics (hot carcass weight (HCW), LD muscle area, BF and marbling score (MS)) were measured. Two steaks were collected from the 12th rib section, and assigned to one- or 14-d aging periods to determine Warner-Bratzler shear force (WBSF). Overall mean (\pm SD) HCW, LD, BF, MS, day-1 and 14 WBSF, and calpastatin activity were 319.86 ± 28.3 kg, 76.69 ± 5.91 cm², 1.16 ± 0.48 cm, 483.30 ± 83.57 , 2.83 ± 0.73 kg, 2.23 ± 0.47 kg, and 2.67 ± 0.42 total activity/g muscle. Exit velocity measured on day 70 was negatively correlated ($P \leq 0.01$) with HCW ($r = -0.40$), BF ($r = -0.29$), and MS ($r = -0.20$), indicating that more excitable steers had lighter carcass, and were leaner compared to calm steers. However, EV on day 0 was not correlated to carcass or tenderness traits. Steers were sorted by d-70 EV and categorized into calm, moderate or excitable temperament groups, based on ± 0.5 SD from the mean d-70 EV of 2.56 ± 0.84 m/s. Calpastatin activity was not correlated with d-0 or 70EV; however, d-1 and 14 WBSF were positively correlated ($P \leq 0.01$) with d-70 EV ($r = 0.37$ and 0.26 , respectively), suggesting that EV measured prior to slaughter may be an indicator trait for tenderness in finishing calves. Steers with calm temperaments had 9.2 % heavier ($P \leq 0.001$) HCW, 32 % more ($P \leq 0.05$) BF and a 0.50 higher ($P \leq 0.05$) marbling score compared to steers with excitable temperaments. The LD muscle area was not different between EV groups. The WBSF values on d-1 and 14 of calm steers were 19.3 and 10.7 % lower, respectively, compared to excitable steers. However, there were no significant differences in calpastatin activity between EV groups. Results suggest that steers with calm temperaments have heavier carcasses, more tender beef and higher carcass quality grades than steers with excitable temperaments.