

### Influence of grazing intensity on behavioural reactivity, pre-slaughter physiology and meat characteristics in horned beef heifers

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**Introduction:** Rearing conditions may influence behaviour, physiological pre-slaughter reactions and meat characteristics.

**Methods:** The present study investigated the effect of grazing intensity (GI) on these traits in 32 beef heifers, initially weighing 422 kg, grazing at either low (LI) or high (HI) GI. LI heifers rotated on eight 72-a paddocks; HI heifers rotated 3-fold more often than LI heifers, on 24 24-a paddocks. At 14 mo of age, we studied their behavioural reactions during a crush test. At slaughter (at 17 mo of age and 439 kg), we measured heart rates (HR) from loading to stunning, post mortem (pm) temperature and pH decline, glycolytic potential and water loss in the m. longissimus thoracis.

**Results:** HI heifers tended to have lower HR at unloading and had lower HR during the last 10 min before stunning and lower thawing loss 48h and 14d pm than LI heifers. GI did not influence behavioural reactivity, temperature and pH decline, or glycolytic potential.

Greater levels of body movements during the crush test were related to lower early pH (1h pm:  $r=-0.64$  and  $-0.47$ ; 6h pm:  $r=-0.36$  and  $-0.42$  for HI and LI heifers, respectively) and faster HR during the last 10 min before stunning to lower glycolytic potential 48h pm ( $r=-0.46$  and  $-0.39$  for HI and LI heifers, respectively). Faster HR before unloading were related to lower drip loss 48h pm ( $r=-0.32$  and  $-0.68$  for HI and LI heifers, respectively) and lower 6h-pm pH to greater cooking loss 14d after maturation.

**Conclusions:** The lower pre-slaughter HR of HI heifers might reflect the previously reported positive effect of human-animal-contact (here through frequent paddock rotation) on fear reactions at slaughter. Further, the results confirm that behavioural reactivity and pre-slaughter stress levels are related to meat characteristics.

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