Cattle Temperament: Effects on Health and Reproduction

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Outline
- Introduction
- Health
  - Immune function
  - Production and growth
- Reproduction
- Economics

Temperament of cattle
- Definitions:
  - Changes in behavior such as fear response to humans and/or to novel environments, Barfink et al. 2011
  - Fear response or the degree of reactivity to human or to novel environments, Carroll 2015

Excitability!!

Contributors to temperament
- Breed
- Gender
- Age
- Previous handling
- Genetics

High Temperament Cattle
- Some have been thought to be “protective” mothers
- Many are just aggressive and too excitable
  - Studies suggest high levels of cortisol
  - Negatively affected by stress
Hypothalamic-Pituitary Axis

Stressors

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How to measure?

• Pen score
• Chute score
• Exit velocity

Pen Score

• Measure of reactivity to human observer in the pen with cattle

Chute Score

• 5-point scale assigned when cattle are restrained in a chute
  • 1 = calm, no movement
  • 2 = restless movement
  • 3 = frequent movement with vocalization
  • 4 = constant movement, vocalization, shaking of the chute
  • 5 = violent and continuous struggling

Exit Velocity or flight speed

• Measured by infrared sensors as cattle exit the chute
  • 1 = walk
  • 2 = trot
  • 3 = run
  • 4 = jumping out of chute
Exit velocity score design

Health

The immune system
- High basal cortisol levels can affect how well the immune system works
- Can cause decrease of other factors that affect immune cells
- May impair cattle's response to vaccination

Sick cattle
- Producers identify sick cattle through visual observation of general health
- Sickness behavior is determined and then cattle pulled for evaluation
- Excitable cattle display diminished sickness behavior → **untreated cattle**!

Production and growth

Metabolism
- Temperamental cattle require more energy for their metabolism
- They are considered inefficient in utilizing nutrients for maintenance and growth
- Reported lower ADG and BCS
- May be due to their increase in activity and arousal level
Feedlot considerations

- Reduced feed intake and growth rates
- Reduced carcass weights and overall fat
- Less palatability of meat
- Darker meat color
- Less tender meat

Reproduction

Reproductive efficiency

- Decreased nutritional status may affect cycling activity
- Stress-related hormones impair fertility
- Cortisol may alter mechanism involved in ovulation and conception pathways

Hypothalamic-Pituitary-Ovary Axis

- Elevated cortisol may inhibit release of FSH and LH
- Calmer cattle tend to reach puberty sooner
- may affect oocytes

Reproductive efficiency

- Excitable cows have reduced pregnancy (88.7% vs. 94.6%) and calving rates (85% vs. 91.8%) (Cook et al., J Anim Sci 2000)
- Temperament may adversely affect the offspring
  - Decreased BW and other growth traits
  - Acclimation may not improve attributes

Acclimation of excitable cattle

- Temperament of cattle is considered to be moderately heritable
- Acclimation to human handling may reduce some of the stressors that the cattle experience
- Environment also has a significant effect
Conclusions

- Selection of docile cattle is the first priority in ensuring overall performance
- Excitable cattle can have reduced growth, overall health, and reproductive traits
- Attempts to reduce stressors may help
  - Acclimation and low stress handling techniques can be useful for producers