



Beef Cattle Library

Evaluating Temperament in Beef Cattle ¹

Professionally
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Introduction

Temperament defines the fear-related behavioral responses of cattle when exposed to human handling. As cattle temperament worsens, their response to human contact or any other handling procedures becomes more excitable. Besides personnel security and animal welfare, temperament has significant implications on cattle performance (see [BEEF021 - Temperament and Performance of Beef Cattle](#)). Therefore, evaluating cattle for temperament can be used as a management decision tool to enhance overall safety and productivity of beef operations. This article will review some of the most common and practical methods used to assess temperament in beef cattle.

Assessment of Temperament in Beef Cattle

Several methods to evaluate cattle temperament were developed during the recent years. These vary from simple visual observations to assessments that require computerized apparatuses, and can be divided into three main categories; restrained techniques, non-restrained techniques, and phenotypic evaluations. In this article, only methods that have been shown to be repeatable within animals (therefore reliable to quantify cattle temperament) and also relatively simple to carry out during cattle handling procedures will be described in detail.

Restrained techniques evaluate temperament when cattle are physically restricted, such as in a squeeze chute. The major problem with these techniques is that cattle with excitable temperament may “freeze” when restrained, and consequently not express their true behavior during these assessments. However, the restrained techniques are typically safer to evaluators and cattle, easy to conduct, and also easier to incorporate into common management procedures, such as when cattle have to be processed for vaccination.

Non-restrained techniques evaluate cattle temperament according to their fear or aggressive response to humans when they are free to move within the evaluation area. Because “freezing” behavior is not a concern with non-restrained techniques, these assessments are commonly considered more accurate in determining cattle temperament compared to restrained techniques. However, non-restrained techniques require additional equipment, labor, and security measures.

Phenotypic evaluations account for external features of cattle that have been associated with temperament. These assessments can be conducted when cattle are restrained in the chute, and are therefore safe and easy to incorporate into common management procedures. However, phenotypic evaluations do not assess behavioral responses of cattle. Consequently, they are indirect measures of temperament.

1. This document is part of the Oregon State University – Beef Cattle Library. Published in June 2010. Prior to acceptance, this document was anonymously reviewed by two experts in the area. For further information, please visit the Beef Cattle Sciences website at <http://beefcattle.ans.oregonstate.edu>
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Chute Score

Chute score is a restrained technique in which cattle are individually restrained in the chute and scored on a 1 to 5 scale according to their behavior; where 1 = calm with no movement, 2 = restless movements, 3 = frequent movement with vocalization, 4 = constant movement, vocalization, shaking of the chute, and 5 = violent and continuous struggling. More simplistic or detailed scales (1 to 3 or 1 to 7, respectively) can be utilized, depending on the evaluator's preference. However, scoring consistency is essential for an accurate evaluation because chute score is a subjective assessment, which means that chute score of an individual animal can vary from evaluator to evaluator. Therefore, to increase consistency and accuracy, evaluators should be trained and comfortable with this assessment, whereas more than one evaluator can be utilized and the scores combined.

Chute Exit Velocity

Exit velocity is a non-restrained technique that evaluates the speed of an individual animal immediately after it leaves the squeeze chute (Figure 1). As the speed increases, the more frightened the evaluated animal may have been due to the human handling in the chute. Exit velocity can be evaluated in actual speed measures (i.e., feet/second) or on visual estimates. To determine actual speed, the evaluator needs to establish a known distance, or route, that the animal will travel after leaving the chute (measured in feet), and then calculate the time required for the animal to travel the route (in seconds). The evaluator can use a chronometer or infrared electronic timers, such as those used in rodeo events. How the route is established is an important consideration. If it begins too close to the chute, temperamental cattle can slip when exiting the chute and therefore need more time to travel through the route. Also, the route should not be too lengthy and/or established too far away from the chute; otherwise calm cattle may stall, whereas temperamental cattle can calm down and decelerate in the middle of the route. Actual speed can also be converted into a score by dividing recorded speeds in quintiles, and assigning a score from 1 to 5 (1 = slowest heifers; 5 = fastest heifers). Exit velocity can also be estimated visually such as in a 1 to 3 scale; where 1 = cattle that walk away from the chute, 2 = cattle that trot away from the chute, 3 = cattle that run away from the chute. Again, more detailed

evaluation systems can be utilized, depending on the evaluator's preference.

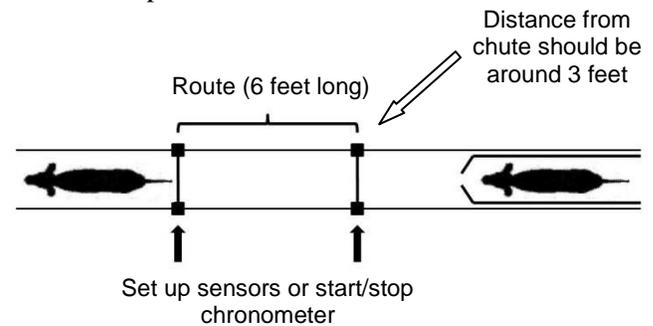


Figure 1. Scheme of the exit velocity calculated in feet/second

Pen Score

Pen score is a non-restrained technique that evaluates the behavioral response of an individual animal when it enters a small pen and interacts with a single evaluator standing inside the pen (Figure 2). Once the evaluated animal notices the evaluator, the evaluator moves 3 steps directly toward the animal and assesses his response on a 1 to 5 scale; where 1 = unalarmed and unexcited animal that walks slowly away from the evaluator, 2 = slightly alarmed animal that trots away from the evaluator, 3 = moderately alarmed and excited animal that runs away from the evaluator, 4 = very alarmed and excited animal that runs with head held high and may charge the evaluator, or 5 = animal very excited and aggressive in a manner that requires evasive actions by the evaluator to avoid contact. Caution and security measures should be adopted if the pen score will be used to assess cattle temperament, such as a pre-established escape route for the evaluator. It is also important that no other animals are present inside the pen; otherwise the evaluated animal will ignore the evaluator and bunch up with the cohorts. Again, more simplistic or detailed evaluation systems can be utilized, depending on the evaluator's preference.

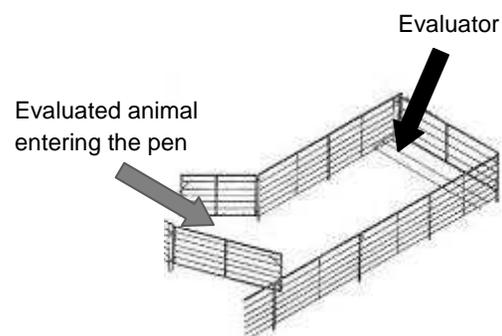


Figure 2. Scheme of the pen score.

Hair Whorl

Several research studies have demonstrated that cattle temperament is related to the position of the hair whorl on the forehead of the evaluated animal (Figure 3). Therefore, hair whorl position is classified as a phenotypic evaluation and can be used as an indirect assessment of cattle temperament. Cattle with hair whorls above the eyes are typically more temperamental compared to cattle with hair whorls located either between or below the eyes (Table 1). The reason for this relationship is that the genes determining hair whorl patterns in cattle are also believed to be associated with behavioral traits.

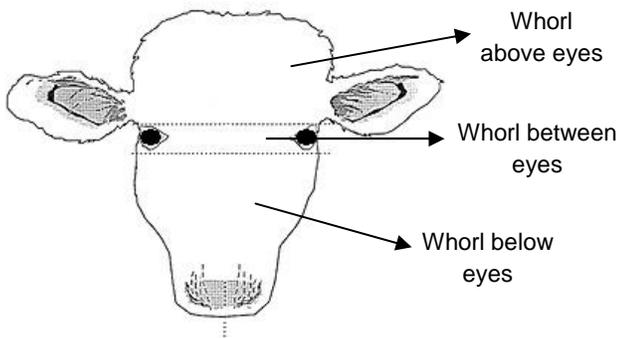


Figure 3. Scheme of the hair whorl evaluation.

Eye White Percentage

Recently, it was determined that cattle temperament is related to the amount of white exposed in the eye of the evaluated animal. Similar to hair whorl, this assessment is classified as a phenotypic evaluation and can be used as an indirect measure of cattle temperament. As the amount of eye white revealed increases, cattle temperament becomes more excitable (for further information, please refer to <http://www.omafra.gov.on.ca/english/livestock/beef/news/vbn0708a1.htm>). The reasons for this relationship, however, are still unknown. Trained evaluators and special equipment, such as digital camera, computer, and special software, are required for adequate quantification of eye white exposed, which can make this assessment difficult to be incorporated into typical beef operations.

Conclusions

Cattle temperament has significant implications on personnel safety and cattle performance (see [BEEF021 - Temperament and Performance of Beef Cattle](#)). Many techniques that evaluate cattle temperament are available to beef

producers. These techniques can be used as an evaluation tool or selection criteria to improve the overall temperament of the herd. Selecting which technique to use will depend on the operation's management system, availability of labor and trained personnel, and also accessibility to specific equipment.

Table 1. Chute score (1 to 4 scale) according to the position of the hair whorl on the forehead.¹

Temperament	Hair whorl type		
	Above eyes	Between eyes	Below eyes
Chute Score	2.3	2.0	2.0

¹ Adapted from Hammond et al. (1996), Fell et al. (1999), and Echtenkamp (1984).

² Following truck transportation for 200 miles.

References

- Arthington et al., 2009. *J. Anim. Sci.* 86:2016-2023.
- Cooke et al., 2009. *J. Anim. Sci.* E-2009-1910.
- Core et al., 2009. *J. Anim. Sci.* 87:2168-2174.
- Grandin et al., 1995. *Appl. Anim. Beh. Sci.* 46:117-123.
- Lanier et al., 2001. *Appl. Anim. Beh. Sci.* 73:93-101.