



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 that the animal will travel after leaving the chute (referred as route and 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. It is important that the route is established not too close to the chute because 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 1-3 scale; where 1 = cattle that walks away from the chute, 2 = cattle that trots away from the chute, 3 = cattle that runs away from the chute. Again, more detailed evaluation systems can be utilized, depending on the evaluator's preference.

**Pen Score** - Pen score is classified as a 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 1-5 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 to 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

## 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. Some of these implications were already described in the March 2009 edition of this magazine, and also during many of my extension talks throughout the state. 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, in more details, 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.

The restrained techniques evaluate temperament when cattle are physically restricted, such as in the 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.

The 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 within 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.

The 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, therefore are safe and easy to incorporate into common management procedures. However, phenotypic evaluations do not assess behavioral responses of cattle; therefore are indirect measures of temperament.

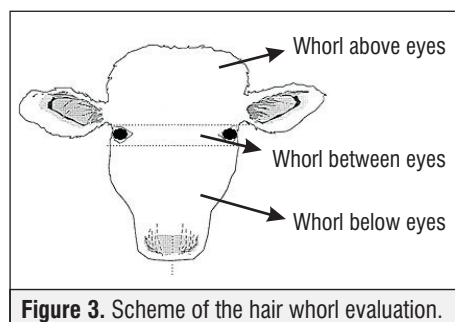
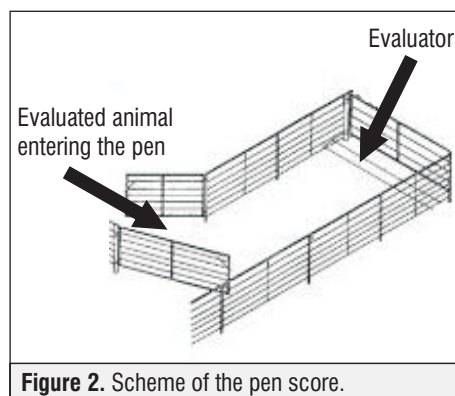
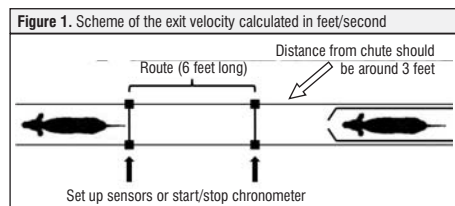
**Chute Score** - Chute score is classified as a restrained technique in which cattle are individually restrained in the chute and scored on a 1-5 scale according to behavior; where 1 = calm with no movement, 2 = restless movements, 3 = frequent movement with vocalization, 4 = constant movement, vocalization, shaking of the chute, and 5 = violent and continuous struggling. More simplistic or detailed evaluation systems (1-3 or 1-7, 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 classified as a restrained technique that

**Table 1. Chute score (1 – 4 scale) according to the position of the hair whorl on the forehead. <sup>1</sup>**

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

<sup>1</sup> Adapted from Lanier et al. (2001)



up with the cohorts. Again, more simplistic or detailed evaluation systems can be utilized, depending on the evaluator's preference.

**Hair Whorl** - Several research studies 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 believed reason for this relationship is that the genes determining hair whorl patterns in cattle are also involved with behavioral traits.

**Eye white percentage** - Recently, it was determined that cattle temperament is related to the amount of white revealed 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 equipments, 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. 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. For questions, please contact <http://oregonstate.edu/dept/EOARC/> or (541) 573-8900.

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