

Topic Summary

Understanding why cattle react the way they do in stressful situations and knowing how to deal with it can be the best way to protect both a herd of cattle and the people who work with them (Sorge et al. 2014). This literature review investigated stress indicators in cattle and the impacts of handling on these behaviours during loading and unloading.

In order to identify stress behaviours in cattle, researchers used a variety of methods to investigate stress, including timed tests and heartrate monitoring, and found that hesitance, pulling, kicking, struggling, defecation and immobilization were all examples of fear-based behaviours (Boissy and Bouissou, 1995; Chen et al. 2015; Grandin, 1997; Grignard et al. 2001). This is an indication of the broad range of stress responses that cattle can exhibit. One of the trickier aspects of studying cattle stress responses is the ambiguity of some of the behaviours. While Boissy and Bouissou (1995) found that vocalization in cattle was not a sign of stress in their tests, several subsequent studies listed it as a stress-related behaviour (Chen et al. 2015; Grandin, 1997; Grignard et al. 2001). When examining the brain chemistry of stressed cattle, Chen et al. (2015) found significant changes in hormone levels, indicating a physiological component to cattle stress responses. It is still unknown if there is a baseline response that can be used across all breeds of cattle and even responses within breeds are known to vary widely (Boissy & Bouissou, 1995; Grandin, 1997).

When assessing the validity of a genetic component to stress behaviours, Grignard et al. (2001) and Grandin (1997) found that the reactivity of an animal could be significantly linked with the sire and lineage of the cow. This indicates that reactivity in cattle and thus, fear responses, is a heritable trait and docility can and has been selected for, with breeds inclined to react similarly in all situations examined (Grandin, 1997; Grignard et al. 2001). Chen et al. (2015) suggested that behavioural issues could be improved upon with selective breeding and better handling practices, however, Grandin (1997) cautioned that over-selection for a particular trait could cause more issues than it would solve.

Cattle can be unpredictable during transport and the amount of stress a cow experiences will depend on a variety of factors that can combine to produce fear-based behaviours (Grandin, 1997). Bravo et al. (2020), Minka and Ayo (2007) and Schwartzkopf-Genswein et al. (2012) were all interested in understanding the effects of transportation, a nigh inevitable aspect of a cow's life, on cattle welfare. Bravo et al. (2020) and Minka and Ayo (2007) observed the loading and unloading of cattle and found that the loading process both took longer and caused more stress on the cattle than unloading, with more reactive cattle sustaining the highest rates of injury. Schwartzkopf-Genswein et al. (2012) researched the change in animal health during transport and found that animals beginning a journey in good health will decline less than others, for example, those with less fat stored. This demonstrates the complexity of the effects of transportation on cattle and the importance of considering multiple factors affecting cattle welfare when planning transport of a herd.

A common theme in research regarding causes of stress behaviours in cattle is the human aspect, as it has been found to significantly affect instances of these behaviours (Ceballos et al. 2018; Kosako et al. 2008). Researchers interested in investigating human-cattle interactions observed consistent negative reactions to certain human actions and found that more training and a gentle approach significantly reduced these reactions and was associated with a reduced rate of injury, for both cattle and handlers (Ceballos et al. 2018; Kosako et al. 2008). While it is widely agreed that training and good handling practices are a benefit to the welfare of cattle, when surveyed, most cattle operations responded that

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they were not interested in attending further training for themselves or their workers (Sorge et al. 2014).

After reviewing these articles, future research that would build on this foundation could include comparing methods of loading cattle while monitoring for stress responses and then critically analyzing the methods for commonalities and differences, aiming to identify and, where possible, eliminate stressful triggers.

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