

FACT SHEET

Transport stress for cattle shipped by sea and through saleyard systems

KEY POINTS

- There is a relationship between the level of stress experienced by cattle and the eating quality of beef.
- Individual animal responses to stress varied and limited the outcomes of the study.
- To ensure the positive effects of a rest period are realised, management practices must be responsive to weather conditions.



There is a relationship between the level of stress experienced by cattle and the eating quality of beef. In Australia, the eating quality of beef is measured by the Meat Standards Australia (MSA) beef grading model, which uses on-farm, carcass and processing inputs to predict the eating quality of all cuts within the carcass. Not all cattle are currently eligible for MSA grading, and therefore, there are price differences available to MSA cattle producers. The aim of this research was to increase the number of cattle eligible for MSA grading and improve the eating quality of the beef by better understanding the impact of stress created by transport, mixing of cattle from different herds in saleyards and handling techniques.

484 CATTLE WERE USED IN THE STUDY

King Island farms allocated 244 cattle to treatment groups to assess various combinations of stressors induced during transport by sea, including ship layout and cattle mixing. To assess potential stressors at the saleyard and during handling, another 240 cattle from Tasmanian farms were transported via road. After transport by road or sea, the cattle were either transported directly to the abattoir for slaughter, sent through a saleyard or sent to rest for two weeks on pasture prior to slaughter.

INDIVIDUAL ANIMAL VARIATION INFLUENCES VARIATION IN STRESS RESPONSES

While trial conditions were carefully planned and managed, the wide variation in individual animal responses to stress substantially impacted the ability of the trials to provide clear direction regarding stress mitigation techniques. Despite this, cuts from cattle that were sent directly to the processor, or were from non-mixed groups, had substantially higher MSA compliance rates coupled with moderately improved eating quality scores. Although the two-week rest period dramatically increased MSA compliance for one group of cattle, severe weather conditions negated this benefit in the replicate group. This suggests that to ensure the positive effects of a rest period are realised, management practices must be responsive to weather conditions.

MANAGEMENT DURING ADVERSE WEATHER INFLUENCES THE EFFICACY OF THE REST PERIOD

Although several technologies, that had the potential to measure individual animal stress were assessed, including blood sampling and non-invasive measures, no objective measurement was able to reliably predict stress or its impact on eating quality. This suggests that current technologies are not likely to provide industry with a single or practical measure of stress that correlates to eating quality impacts in beef. Identification of a reliable measure would simplify pathways to MSA grading and potentially increase the proportion of cattle that are eligible for MSA grading, and as such, there is value in continuing efforts to develop a single objective measurement of cattle stress.

Related reports and resources

1. Final report: <https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Meat-Standards-Australia-Mixing-and-Stress-Trial/4149>
2. B.SBP.0110 "Addressing key issues affecting compliance rates of pasture-fed cattle in southern Australia" (<https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Addressing-key-issues-affecting-compliance-rates-of-pasture-fed-cattle-in-southern-Australia/4108>)
3. 2011 background paper on MSA Pathways (<https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Meat-Standards-Australia-Mixing-and-Stress-Trial/4149> ; Appendix 12.1)
4. B.NBP.0722 "Transport duration effects on MSA eating quality" (<https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Productivity-On-Farm/Transport-duration-effects-on-MSA-eating-quality/447>)