

Pre-Transport Management Affects Later Performance

Calf management before transport influences later performance of those animals under stress, Canadian researchers say.

Behavioral and physiological indicators of stress, as well as growth performance and morbidity rates, were assessed in 174 steer calves (480 lbs. $\pm$ 81.5 lbs.) for 30 days after transport from ranch to feedlot.

The calves were conditioned (C) or not (NC), and subjected to either short (2.7 hours, SH) or long hauls (15 hours, LH). Calves in the study were weaned and vaccinated 13 and 29 days, respectively, prior to transport, and therefore defined as conditioned. All calves in the study were dehorned and castrated 10-14 days after birth.

Upon arrival at the feedlot, calves were randomly assigned to 16 pens, four pens/treatment, one of which was equipped with a radio-frequency ID system for continual monitoring of individual bunk attendance. As part of the NC treatment, calves were also exposed to a short (2-hour) transport 24 hours after their initial arrival to the feedlot. All calves were fed a barley silage/barley grain-based starter ration and weighed every seven days.

Cortisol concentrations were higher in NC compared to C calves regardless of transport distance. NC calves also had higher pre- and post-loading cortisol concentrations than C calves. In transit, CSH steers had the lowest heart rate (67.8 beats/minute). Heart rate was highest during the first 15 minutes of the journey for all calves and gradually declined until 121-161 minutes into the trip. NC calves spent more time at the feed bunk than C calves (222.9 minutes/day vs. 128.6 minutes/day) in the first two days in the feedlot. CLH calves were observed more frequently at the water than NCLH calves.

An interaction was observed for shrinkage and average daily gain (ADG). Shrinkage was greater in CLH than in NCLH steers (52 lbs. vs. 32.2 lbs.), and in NCLH than in either CSH (17.2 lbs.) or NCSH (20.3 lbs.) steers. The lowest ADG was recorded for CLH and NCSH calves (1.76 lbs. and 1.98 lbs., respectively), although their dry matter intake (13.2 lbs./day vs. 15 lbs./day) was similar to calves in the other treatment groups. Morbidity rate was 5.17% with no treatment effect.

The study shows conditioning calves prior to transport allowed them to better tolerate the stressors of transport and handling. This was observed in lower cortisol concentrations pre- and post-loading, as well as higher percentages of time feeding and less time standing and milling in their pens immediately after transport compared to NC calves. In addition, the combined effect of conditioning and short-haul transport was least stressful as witnessed by the low shrink, high dry matter intake and ADG in the first month after transport.

Source: Schwartzkopf-Genswein, et al, 2007, *Applied Animal Behavior Science*, 108.

-- **Alaina Burt**