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BEEF CATTLE RESEARCH COUNCIL

RESEARCH FACTS

RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

Beef Science Cluster



Improving Calf Transportation

Project Title:

Effect of ventilation management strategies and stocking density during transport on trailer microclimate and calf welfare

Project Code:

ANH.12.10

Completed:

April 2014

Researchers:

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Published:

- [Journal of Animal Science](#) – “Trailer microclimate and calf welfare during fall-run transportation of beef calves in Alberta”
doi:10.2527/jas.2014-7960

Background:

In 2007, Alberta Beef Producers funded a [transportation benchmarking study](#) led by Dr. Karen Schwartzkopf-Genswein of Agriculture and Agri-Food Canada’s Lethbridge Research Station. The research team surveyed over 9,000 loads and close to half a million cattle commercially transported to, from and within Alberta over an 18 month period. That study was completed in 2009 and published in 2012. They reported that 99.98% of short haul (4 hours or less) and over 99.95% of long haul (4 hours or more) cattle arrived in their destination with no serious problems (e.g. lame, downer or dead). So on the whole, Canada's cattle transportation sector is doing a very good job.

However, the study also found that some cattle were more likely to have problems than others. Yearlings and fat cattle coped with transport well. On average, problems were only found in one for every 4407 yearlings and one for every 2908 fat cattle. In contrast, one of every 1773 weaned calves became lame, down or dead. In other words, calves were 1.5 times more likely to have problems than fat cattle, and 2.5 times more likely to have problems than yearlings. That indicates that Canada's beef industry could improve animal welfare and save money by finding better ways to transport weaned calves.

In 2010, the BCRC funded a follow-up study with this team to identify factors influencing transportation outcomes and health in weaned beef calves.

Objective:

To examine the effects of loading density on trailer microclimate and calf health welfare, and to develop recommendations regarding best management practices for calf transportation.

What They Did:

24 loads of 2,238 commercial beef calves were trucked from auction markets (18 loads) or ranches (6 loads) to four feedlots during the fall run (2 loads in September, 13 in October, 5 in November and 4 in December). Two loading densities were compared. Half of the loads used a loading density quite close to average industry practice identified in the ABP benchmarking study ($0.67\text{m}^2/\text{calf}$ or less). The other half allowed more space (more than $0.67\text{m}^2/\text{calf}$). Most trips were nearly 8 hours long, though some lasted nearly 24 hours. Among many other things, animal health / condition was visually evaluated and animal weight and blood samples were collected before and after loading. Air temperature was recorded in the days before transportation, and air temperatures in the trailer were monitored throughout the trip. Auction mart calves were given an antibiotic on arrival, ranch-direct calves were not, and animal health treatments were tracked during the first 30 days on feed.

What They Learned:

All calves were reported to be in good condition at loading and when checked partway through the trip, although one calf was down and had to be euthanized when it arrived at the feedlot. Blood samples indicated that calves hauled at the higher loading density were slightly more dehydrated on arrival than calves that had more space during transport. Dehydration was also related to temperature changes. Calves became more dehydrated if temperatures during transport were much higher or lower than they were accustomed to. Shrink was higher for calves hauled in trailer temperatures below 5°C (3.93%) than for calves hauled in trailers warmer than 5°C (2.77%).

A total of 156 calves were pulled during the first month on feed. As expected, the majority of these (134/156) were pulled and treated for bovine respiratory disease. Treatment rates can't be compared between the ranch-direct and auction mart sourced calves, because they went to different feedlots and because the auction mart calves were treated with an antibiotic on arrival while the ranch direct calves weren't. However temperature during transport affected treatment rates. Treatment rates were 2.5 to 8.5 times higher for calves hauled when the trailers were colder than 5°C than for calves hauled in trailers warmer than 5°C .

What It Means:

Pre-transport loading decisions are important. Transportation is more stressful when calves are hauled at high loading densities or in cold weather. When the farm records were checked, it turned out that the downer calf that was euthanized on arrival at the feedlot had been sick and treated with antibiotics shortly before being loaded. Although it appeared to be fine when it was loaded, it ended up in a high density load, travelled in cold weather, went down and ended up dead. While one example does not make a rule, this anecdote is a clear example of why pre-transport decision making is important. Sick and injured (compromised) animals cannot cope with the stresses of transport as well as healthy animals. Do not load sick or injured animals if you can avoid it. But when transportation is necessary, compromised livestock should be transported with special provisions. These can include segregating the animal(s), providing them with more space and bedding, loading them last and unloading them first.

Proudly Funded By:



The Beef Cattle Industry Science Cluster is funded by the Beef Cattle Research Council, a division of the Canadian Cattlemen's Association, and Agriculture and Agri-Food Canada to advance research and technology transfer supporting the Canadian beef industry's vision to be recognized as a preferred supplier of healthy, high quality beef, cattle and genetics.

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