
Photo by Kailyn Beaulac

Turkey transport

Foundational research looks at how warm and cool conditions affect birds

The Canadian Food Inspection Agency's (CFIA) updated animal transport regulations came into effect on February 20, 2020, and with it, a renewed focus on the importance of health and wellbeing of animals that are being transported. But in a country with as many climate variations and geographic differences as Canada, how do we measure the health and wellbeing of animals on the move?

Dr. Trever Crowe, professor, College of Engineering and Dr. Karen Schwean-Lardner, associate professor, College of Agriculture and Bioresources at the University of Saskatchewan, set out to investigate the response of turkey hen and tom physiology, welfare and meat quality to several exposure conditions during simulated transport. Their conclusions? Turkeys handle high and low temperatures better than their team expected, and more research is needed to determine upper and lower limits.

"Live transport can be a great concern to members of the public, because when it's -20C outside, it's natural to think it must be really cold inside those trucks," says Crowe. "But many people don't appreciate the amount of heat those birds are producing, and how well they tolerate exposure to various weather conditions."

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The research team exposed mature turkeys to five temperature variations: 28C at 30% and 80% relative humidity, 20C at 30% and 80% relative humidity and -18C (which was not controlled for humidity). They used a total of 240 turkeys: 120 12-week-old hens and 120 16-week-old toms. Birds were placed in crates, mimicking the typical environment and space allowance during transportation. Each crate of birds was then placed inside a pre-conditioned environmental chamber, and bird behaviour and core body temperature were recorded for an 8-hour duration. Immediately after they were removed from the chamber, birds were processed and the team recorded live shrink, blood glucose concentration and other meat-quality measurements.

"We expected to see greater response in core temperature or meat colour, but there was no consistent response," says Crowe. "Behavioural changes when the birds were exposed to 28C and -18C suggested that the birds were experiencing discomfort, but their muscle physiology was not significantly or consistently affected."

Crowe notes that previous research on broiler chicken transportation has led to a greater understanding of how to manage a truck's venting configurations, accounting for ambient temperature, humidity and the heat and moisture produced by birds. Skilled operators are trained to use tarps, container openings and tactics such as vehicle speed to distribute heat appropriately. However, because broiler chickens have fewer feathers and are smaller in size, they are more sensitive to cold temperatures than adult turkey toms and hens. "We know that mature turkeys are more hardy than broiler chickens, but we are still uncertain about the limits of temperature and duration combinations."

This study laid the foundation for turkey transportation research. It has resulted in two scientific publications in *Poultry Science*, and the data have contributed to the development of the codes of practice. Next, Crowe and Schwean-Lardner hope to study a cooler set of conditions, and incorporate features such as air flow, noise, vibration and movement to more accurately simulate transport conditions. Eventually, they see opportunity to test temperature, humidity, stocking density and duration in isolation and combination, to understand how those factors could affect bird responses

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