

## **Assessing Physical Methods for On-Farm Euthanasia of Compromised Turkeys**

C. R. Woolcott<sup>1\*</sup>, S. Torrey<sup>1\*</sup>, P. V. Turner<sup>2\*</sup>, K. Schwean-Lardner<sup>3</sup> and T. M. Widowski<sup>1\*</sup>

<sup>1</sup>Department of Animal Biosciences, University of Guelph, Guelph, ON

<sup>2</sup>Department of Pathobiology, University of Guelph, Guelph, ON

<sup>3</sup>Department of Animal and Poultry Science, Saskatoon, SK

\*The Campbell Centre for the Study of Animal Welfare, University of Guelph, Guelph, ON

Presenting author: C.R. Woolcott

On-farm euthanasia is an important welfare issue in the poultry industry and is particularly difficult to perform in turkeys. The objective of this study was to determine the effectiveness of two commercially available non-penetrating captive bolt devices (Bock Industries, USA) for on-farm euthanasia. The Zephyr-EXL is hose-connected to an air compressor, whereas, the TED is cordless and powered by a propane fuel cell and battery. Both devices were used by 10 stock people to euthanize turkeys from 6 commercial farms. They were tested at three stages of production: 4 weeks (n=41, n=51), 10 weeks (n=39, n=40), and 15-20 weeks (n=42, n=40). After application, brain stem reflexes were monitored every 15s to assess insensibility. Convulsions and heart beat were recorded to determine estimated time of brain death and cardiac arrest. Brain hemorrhages and skull fractures were scored to evaluate traumatic brain injury. Effects of device, age and sex were evaluated. Zephyr-EXL and TED caused immediate, irreversible insensibility in 97.5% and 89.3% of birds, respectively ( $P=0.0108$ ). Reasons for device failure included incorrect placement, and incorrect adapter selection (TED). For birds rendered insensible, there was no effect of device on any other measures ( $P>0.05$ ). Tonic convulsions ended later in males ( $195 \pm 6.72$  s) than females ( $171 \pm 6.22$  s,  $P=0.0041$ ). Cardiac arrest also occurred later in males ( $232 \pm 6.29$  s) than females ( $208 \pm 5.96$  s,  $P=0.0086$ ). Cardiac arrest occurred faster at 4 weeks ( $197 \pm 8.31$  s) compared to 10 weeks ( $222 \pm 6.37$  s;  $P=0.0214$ ) or 15-20 weeks ( $244 \pm 6.99$  s;  $P<0.0001$ ). Macroscopic scoring indicated moderate to severe subcutaneous hemorrhage in 71% of birds and severe skull fracture in 97%. Although both devices were effective in the majority of cases, the Zephyr-EXL was more reliable and consistent in causing immediate insensibility and traumatic brain injury leading to death.

**Key words:** animal welfare, euthanasia, poultry, turkey, captive bolt

**PRESENTED AT EUROPEAN POULTRY WELFARE CONGRESS, PLOUFRAGEN, FRANCE, JUNE 2017**