

Effective On-Farm Methods for Culling Turkeys

As part of a larger study on turkey euthanasia [1], Dr. Tina Widowski and her graduate student Marisa Erasmus sent a questionnaire to Canadian turkey farmers. Of the respondents, 91% euthanize turkeys on farm and rank animal welfare (56%) and worker safety (35%) as the most important considerations when choosing a method of euthanasia.

Currently, the recommended methods for culling (killing and removing) turkeys from the flock are manual cervical dislocation for young birds and mechanical cervical dislocation using bovine castration forceps (burdizzo) or blunt force trauma for large birds [2, 3]. However until recently, neither of these methods had been rigorously tested in their ability to render an animal insensible. Additionally, these methods may be physically and psychologically difficult for an operator to perform. These concerns prompted Dr. Widowski and Marisa Erasmus to examine the recommended techniques as well as a non-penetrating captive bolt (Zephyr) for effective stunning and death of cull turkeys.

Erasmus evaluated the Zephyr, blunt trauma, and manual cervical dislocation (neck stretching) on broiler turkeys (~4.1 kg); the Zephyr and burdizzo (neck crushing) on turkey hens (~11.4 kg); and the Zephyr and blunt trauma on turkey toms (~13.1 kg). The Zephyr was shot twice in succession; blunt trauma was given in a single blow by either a metal bat or metal pipe (metal instrument did not appear to influence effectiveness). Insensibility was measured through ocular reflexes (nictitating membrane and pupillary response to light) and assessing post-mortem brain damage (micro- and macroscopic subdural haemorrhaging). Death was measured by the end time of convulsions and breathing. Note, the time to insensibility rather than death is deemed more important for animal welfare since it measures the duration of suffering.

Erasmus found that the Zephyr and blunt trauma techniques directly and consistently disrupted brain function resulting in immediate insensibility followed by death. For turkey toms, there was no significant difference in effectiveness between the Zephyr and blunt trauma methods. For turkey hens, ocular reflexes were present in 100% of hens after cervical crushing (burdizzo) versus 17% after the Zephyr. For broiler turkeys, a greater proportion of ocular reflexes were present in neck-stretched birds than in either the blunt trauma or Zephyr

euthanized birds. While there was no significant difference between the blunt trauma and Zephyr effectiveness in broiler turkeys, a smaller bird is a smaller target and a second blow was occasionally necessary if birds showed signs of consciousness. Overall, these results show that the Zephyr and blunt trauma are effective means of euthanasia whereas manual and mechanical cervical dislocation are less effective at inducing insensibility

Using a Zephyr

Operating a Zephyr requires pulling a trigger, making it substantially easier to deploy than the physical force required for other methods.

Method: The Zephyr is powered by an air compressor. While portable, it is heavy and it is suggested that the bird be brought to the Zephyr instead. An airline pressure of 827kPa was tested by Erasmus and resulted in immediate insensibility followed by death. It is suggested that operators use some form of restraint for large mature birds for ease of handling and accuracy, and also to reduce the number of stock people required. Lay the bird on its sternum with its neck resting on the ground.

Target: Apply the pistol perpendicular to the frontal bone, midline between eyes and ears where there is a natural depression in the skull. This placement is directly above the cerebral cortex upon which consciousness depends. It is also the thinnest part of the skull. Shoot twice in succession.

Endnotes

1. Erasmus, M.A., Lawlis, P., Duncan, I.J.H, and Widowski, T.M. 2010. Using time to insensibility and estimated time of death to evaluate a nonpenetrating captive bolt, cervical dislocation, and blunt trauma for on-farm killing of turkeys. *Poultry Science* 89: 1345-1354
 2. CARC. 2003. Recommended code of practice for the care and handling of farm animals—Chickens, turkeys and breeders from hatchery to processing plant. Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada. (CARC recommends culling young turkeys by cervical dislocation and older turkeys by blunt trauma).
 3. CCAC. 2009. Guidelines on the care and use of farm animals in research, teaching and testing. http://www.ccac.ca/en/CCAC_Programs/Guidelines_Policies/PDFs/Farm_Animals.pdf Accessed Dec 2010. (CCAC recommends using a burdizzo on large birds when manual means are difficult to apply).
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This factsheet is based upon the recent published research:

Erasmus, M.A., Lawlis, P., Duncan, I.J.H, and Widowski, T.M. 2010. Using time to insensibility and estimated time of death to evaluate a nonpenetrating captive bolt, cervical dislocation, and blunt trauma for on-farm killing of turkeys. *Poultry Science* 89: 1345-1354

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