

## A Comparison of Various Euthanasia Devices and Methods in Turkey Hens

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Humane on farm euthanasia is a critical aspect of maintaining good welfare in turkey production. Cull, injured, sick, and down birds must be euthanized in a timely manner in order to maintain welfare & prevent disease transmission within a flock<sup>1</sup>. A humane euthanasia must induce rapid insensibility and cause brain death that leads to respiratory and cardiac arrest<sup>2</sup>. For routine use of euthanasia tools on farm, it is also important to consider durability, ease of use, and cost of the method being proposed, in addition to the ability to achieve consistent, immediate, irreversible euthanasia.

There are many different tools on the market to assist in the euthanasia process in turkeys. As a poult grows and matures, the appropriate tools and techniques for proper euthanasia change to adapt to the size of the bird, and skill of the individual performing euthanasia<sup>3</sup>. A third-party evaluation can help to determine if the tool delivers a consistent, immediate, irreversible euthanasia that does not result in suffering of the bird across a multitude of sizes.

One such study evaluated a carbon dioxide system on two ages of hens. Each bird was evaluated behavioral indicators of distress, insensibility, and death<sup>4</sup>. Distress was indicated by head shaking & gasping. Insensibility was indicated by loss of posture, and death was indicated by cessation of rhythmic breathing, cessation of movement, and defecation<sup>4,5</sup>.

The study concluded that the carbon dioxide system was effective and efficient at inducing humane euthanasia for 100% of the 13 & 33 day old turkey hens with the 20 second CO<sub>2</sub> prefill, 120 second wait cycle<sup>4</sup>. This study did not test other ages of birds to determine efficacy, nor did it test euthanizing more than one bird at a time and as such cannot endorse the use in that way. This means that for each bird to be euthanized on the farm, it takes 140 seconds to complete the cycle, making it inefficient when there is a large number of poults to be euthanized.

A prototype of a manual non-penetrating euthanasia device, an experimental crossbow, was trialed to determine efficacy and efficiency in commercial and breeder hens in an unpublished study. Post-euthanasia the study evaluated pupillary light reflex, nictitating membrane reflex, gasping, jaw tone, neck tension and time to last movement to determine efficacy<sup>6</sup>. Necropsies were performed to evaluate external hemorrhage, subcutaneous hemorrhage, and skull fracture.

The experimental crossbow effectively euthanized 100% of the breeder hens, but only 87% of the grower pullets and toms. Breeder hens had a slightly longer time to last movement, at 168 seconds, compared to growers, at 164 seconds. Additionally, with the non-penetrating device, external and subcutaneous hemorrhage and skull fractures occurred in both age groups.

A third study evaluated several different styles of captive bolt devices and mechanical cervical dislocation compared to manual dislocation at eight- and twelve-week turkeys. All methods were tested for loss of brainstem reflexes, euthanasia success, and torn skin. Radiographs were taken to analyze cervical dislocation techniques for proper dislocation<sup>7</sup>.

Comparison across all devices found that all methods resulted in effective euthanasia. Captive bolt methods resulted in more lacerations than other methods, yet had an immediate loss of brain stem reflexes<sup>7</sup>. Mechanical cervical dislocation was more likely than manual cervical dislocation to result in crush or damage to the vertebrae, and less likely to be in the proper location<sup>7</sup>.

## References

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