

## ANIMAL WELFARE

**Title:** Effectiveness of a non-penetrating captive bolt for on-farm euthanasia of low viability piglets  
**NPB #06-165**

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### Scientific Abstract

Swine producers must inevitably perform euthanasia of low birth weight, low viability and compromised piglets. The American Veterinary Medical Association and the American Association of Swine Veterinarians currently recommend manual blunt trauma to the head as a humane option. However, some stock people may find this method esthetically and emotionally unacceptable and therefore, a non-penetrating captive bolt device would be a valuable alternative. The objective of this experiment was to determine the effectiveness of a non-penetrating captive bolt (Zephyr) in comparison to blunt trauma for on-farm euthanasia of low viability piglets. Eleven stock people from six commercial and one research farm were supplied with a Zephyr gun and air compressor and trained how to operate the device. Stock people euthanized low viability piglets with either the Zephyr (ZE) (N=99) or manual blunt trauma (BT) (N=76). Signs of sensibility, respiration, duration of reflex movements and heartbeat were recorded. Subcutaneous and subdural hemorrhaging and degree of skull fracture were scored on a five-point scale during post-mortem examination. SAS Proc GLM was used to test for the effects of Farm, Stockperson, Treatment and their interactions on the durations and scores. Piglets euthanized by ZE had longer durations of leg movement and heart beat ( $124.6 \pm 11.2$  vs.  $68.4 \pm 7.1$  sec and  $408.3 \pm 50.3$  vs.  $170.9 \pm 18.4$  sec,  $P < 0.001$ , respectively) as well as higher subcutaneous and subdural hemorrhage scores ( $3.6 \pm 0.1$  vs.  $2.5 \pm 0.2$ ,  $P < 0.0001$  and  $3.5 \pm 0.1$  vs.  $2.5 \pm 0.2$ ,  $P = 0.0001$ ; respectively) as compared to BT regardless of farm and stockperson. However, there was also variation among farm for duration of heart beat ( $P < 0.05$ ) and for stockperson for skull fractures score ( $P < 0.01$ ) suggesting the degree of trauma was inconsistent. There were a greater number of ZE piglets (13/99) which began to regain signs of sensibility as compared to BT (0/76). These results indicate that manual blunt trauma to the head is a rapid and humane method for on-farm euthanasia of low viability piglets. Further modification to training, technique and the apparatus are required before the Zephyr can be recommended as an equally humane alternative for piglet euthanasia.

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