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The Old School, Brewhouse Hill, Wheathampstead,
Hertfordshire AL4 8AN, UK

Animal Welfare 2012, 21(S2): 35-42
doi: 10.7120/096272812X13353700593446
ISSN 0962-7286

Preliminary evaluation of the effectiveness of captive-bolt guns as a killing method without exsanguination for horned and unhorned sheep

TJ Gibson^{*†}, AL Ridler[‡], CR Lamb[†], A Williams[§], S Giles[#] and NG Gregory[†]

[†] Department of Veterinary Clinical Sciences, Royal Veterinary College, University of London, Hatfield, Hertfordshire AL9 7TA, UK

[‡] Institute of Veterinary, Animal and Biomedical Sciences, Massey University, Pamerston North 4442, New Zealand

[§] Department of Veterinary Medicine, University of Cambridge, Cambridge CB3 0ES, UK

[#] Animal Welfare and Behaviour Group, School of Clinical Veterinary Science, Bristol University, Langford BS40 5DU, UK

* Contact for correspondence and requests for reprints: tgibson@rvc.ac.uk

Abstract

The current study aims to make welfare-based recommendations for gun/cartridge combinations and shooting positions that will ensure death of the sheep (horned, unhorned, rams and ewes), without the need for either sticking or pithing. The study examined the pathophysiology of captive-bolt gun (CBG) injuries that result in incomplete concussion leading to death. Behavioural, brainstem and cranial/spinal responses were examined along with gross pathology in 489 animals (116 polled ewes, 134 horned ewes, 117 polled rams and 122 horned rams) following a variety of CBG-cartridge combinations. Shooting horned rams was more challenging than unhorned sheep, partly because minor movements of the head at the time of shooting can result in deflection of the gun by the horns. Marksmanship was the definitive factor: 100% of animals that showed signs of incomplete concussion were found to have been shot incorrectly. The findings will have application when it is necessary to kill sheep on farms for disease control or euthanasia purposes.

Keywords: animal welfare, captive bolt, disease control, ewes, rams, sheep horned and polled