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This issue presents 21 papers including:

- Human-animal relationships at red meat abattoirs
- Evidence for pain in decapod crustaceans
- Practical improvements for animal welfare at slaughter
- Captive-bolt as a killing method for sheep
- Electrical stunning in ostriches
- Improving the poultry shackling line
- Poster abstracts

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Free bullet rifle shooting of outdoor cattle

K Schiffer and O Hensel

Department of Agricultural Engineering/Livestock Systems Engineering, University of Kassel, Witzenhausen, Germany

(Email: karen.schiffer@uni-kassel.de)

Introduction: Cow-calf herds for beef production kept outside year round have become more important in the context of species' appropriate livestock husbandry as well as landscape management in certain nature conservation areas. These types of management styles offer less frequent human-animal interactions. Animals not familiar with humans can be more challenging to handle, especially on the day of slaughter. Free-ranged animals without habituation may get heavily stressed by stress factors such as spatial tightness, fodder deprivation, or close contact to foreign animals. The negative impact on meat quality due to pre-mortem stressors is known, e.g. dark-firm-dry meat (DFD). The purpose of this project is to expand a possibility for cattle to get slaughtered without any delay. In addition to the animal welfare aspect, an economic surplus for the farmer could be achieved if there was a measurable improvement in meat quality. Thus, the first investigation focuses on the question of whether meat quality of beef cattle slaughtered on pasture differs from meat quality of ordinarily slaughtered animals from the same herd. Animals, Material, Methods (Results: summer 2011): In compliance with the German, as well as the EU regulation on the protection of animals at the time of killing, free-bullet rifle shooting is an allowable stunning method for outdoor cattle. Within the current investigation, 20 Galloways (2 per week) got slaughtered on pasture. For high shooting accuracy, the rifleman was situated as close as possible to the feeding herd (2–15 m). All herd members have been inspected the day before to enable free-shooting choice. Common signs of life were controlled immediately after shooting, e.g. no eye-ball rotation, no corneal reflex. A front loader placed the stunned animal into a special trailer which is considered a decentralized part of any EU-certified slaughterhouse. In the trailer, the killing by de-bleeding via breast-stick took place. Afterwards, the transportation to an abattoir for gutting and further processing started. Twenty Galloways of the same herd and age are slaughtered ordinarily, i.e. separated, caught, transported to the abattoir, lairaged, stunned by captive bolt and de-hbled via breast stick. Investigation of meat pH and temperature, 1, 24 and 48 h post mortem, tenderness, water-holding capacity and bleeding degree as well as glasce and lactic acid in blood. Gaining additional information via behavioral observation and pathological investigation of brain damage. Following project (2012): Investigation of sun quality of cattle stunned by free-bullet rifle shooting.

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Recent developments in euthanasia equipment

C Scrivens

Accies & Shetvoke Ltd, Selco Way, First Avenue, Minworth Industrial Estate, Minworth, Sutton Coldfield, West Midlands B76 1BA, UK

(Email: clivescrivens@eyo.co.uk)

Accies and Shetvoke Ltd have been manufacturing ‘CASH’ Captive Bolt Humane Killers for nearly 100 years, and the equipment is well renowned and used throughout the world. The Cash Dispatch Kit is a recent development that has proven to be very effective in providing single-step euthanasia for the casualty industry, on commercial farms, companies transporting animals, mass euthanasia programmes and many other casualty situations. The kit includes a heavy duty Cash Special captive-bolt device with interchangeable bolt assemblies and different strength blank cartridges to provide a euthanasia system for a wide range of animals. The Cash Special on which the kit is based was introduced in 1980, replacing the world-renowned Supercash pistol. With substantial improvements in materials and ballistic design the Cash Special offers performance, quality and robustness never previously seen in the market place making it the most widely used and versatile captive-bolt tool in the world. Further developments of the Cash Special using heavier duty parts, improvements in materials and design allowing the use of more powerful blank cartridges has lead to the development of the Cash Dispatch Kit. The product is available with penetrating and non-penetrating captive-bolt assemblies and a selection of cartridge strengths for different sizes and weights of animal. For poultry, newborn, suckling and small nursery pigs, lambs, goats and newborn calves, the kit provides controlled blunt-force trauma through the application of a specially designed non-penetrating captive-bolt assembly. The critical parameters for the bolt assembly include a muzzle face that is designed to accommodate the dimensions of the skull, a flat muzzle head with radiused edges and a reshaped slant shot head. Due to differences in critical physiological parameters (skull thickness, bone hardness, depth of brain, etc) of various species and age of animal a system of muzzle/bolt assemblies and developed forces is necessary to provide single step euthanasia capabilities. Therefore a variety of penetrative bolts and a selection of cartridge strengths are available in the kit. A penetrative short-bolt assembly is suitable for lambs, nursery and grower pigs. A medium length bolt assembly is designed for larger pigs, sheep and average-size cattle and finally, a long-bolt assembly can be selected for boars and sows, heavy cattle and bulls and horses. The tool is provided with a detailed reference guide ensuring easy-bolt assembly and cartridge selection, and each bolt assembly is marked with the maximum strength cartridge that can be used. Following extensive research and trials, the effectiveness and flexibility of the Cash Dispatch Kit has already proved itself as providing a single-step euthanasia system for the livestock industries.

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