

The following comments relate to the Section 11 on humane killing.

Regarding the standards. I think the standards need to be more specific about what methods are approved and not approved. It may simply be dealt with as follows:

Approved humane killing methods are limited to: gunshot, captive bolt or blunt trauma to the head, and veterinary administered intravenous agents while bleeding and pithing must only be used as follow up methods.

Methods not approved include: bleeding as a primary method, blunt trauma to animals older than 24 hrs, drowning, asphyxiation, electrocution, and intravenous injection of caustic chemicals or any other method that does not result in rapid loss of consciousness followed by death while unconscious.

Regarding the recommended position and direction of fire guidelines. Remove mention of temporal shots. Temporal shots don't work in adult cattle even with heavy calibre rifles. The zygomatic arch, ramus of the mandible, depth of tissue to the cranium and thickness and angle of the cranium in the temporal region make this an impossible shot. Anyone suggesting that this is a successful shot does not know what they are talking about. Temporal shots are a myth that has been perpetuated for years and it is time it was killed off. The attached picture of a bovine skull may help convince the skeptics.

Use the recently developed MLA diagrams – they are anatomically correct. The existing side view diagrams are anatomically incorrect with respect to positioning of the ears relative to the brainstem. The brainstem, which should be targeted, lies between the ear attachments. For frontal and poll shots a simpler and more easily remembered recommendation, and one with consistently better outcome, is to aim between the base of the ears. This simple advice covers both point of entry and direction of aim.

Poll shots with captive bolt in bulls and heavy cattle should be avoided as the bolt in most models is too short (only 55 mm penetration depth).

In the notes where it says the diagrams are representative and individual anatomical differences should be taken into account - this can be made redundant if you use the MLA diagrams and make it understood that if the base of the ears are used as the external anatomical landmarks, because *the brainstem lies midway along an imaginary line drawn between the base of the ears*, all will be well. The attached photos of hemisected skulls of cattle and sheep may help convince the skeptics.

Regarding captive bolt devices. To say the length of the bolt should be appropriate for the class of cattle is irrelevant. Most models penetrate to a maximum depth of 55 mm (2 ¼ inches) so not much depth at all really. It is the diameter and velocity of the bolt which are the important determinants of killing power, not the length of the bolt. The important things with captive bolts and firearms is maintenance and calibre and to be prepared to immediately repeat the shot if necessary. It will be a rare farmer indeed who will bleed or pith, and do it correctly. We tend to go on about bleeding and pithing when a repeat shot will almost always do if the animal is not dead.

Regarding confirming death. My suggestion is to recommend confirming death by observation of four things only to keep it simple, easy and memorisable: 1. no eye movement, 2. no blink reflex, 3. fixed dilated pupils, and 4. no breathing for at least 5 minutes (3 minutes is too short, some will recover their breathing after a long delay. After 5 mins of no breathing they will surely be dead; and drop the reference to rhythmic – breathing is breathing). Personally, I also check for absence of tongue and jaw tone but this is probably overkill. Absence of heart beat and pulse are too difficult to see, hear or feel reliably in the field, even by veterinarians. Checking for presence of brain death by

absence of brain reflexes is easier, simpler and more reliable. Breathing is the all important sign to check for – whatever you decide to include, ensure breathing is there.

Regarding bleeding out. The thoracic stick is ok in calves because the knife easily reaches the major arteries branching anteriorly from the heart. In adult cattle on the ground however, it doesn't work so well (it's ok in an abattoir when the carcass is hanging upside down for gravity assisted blood flow, and performed by a skilled operator) but it is actually very awkward on the ground.

The recommended bleeding cuts for cattle are the throat cut to sever both carotids in the upper neck, or the the lower neck cut (stick) to sever one carotid low down on the neck near the thoracic inlet where its diameter is large.

It is good to see no recommendation of armpit cuts. They are a bit of a gimmick (show me a farmer who is going to reflect the foreleg of a cow!), and it is a good way to get kicked.

Hope this helps. Feel free to contact me if you have any questions.

Regards

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