

Some of the recommendations also require clarification and consideration of their practicality. It is said that stunning should be verified by the lack of consciousness — is this for a sample of the harvest or for each individual fish? Although the ideal, the latter would be difficult to achieve when stunning and killing on a large scale, as may the requirement to re-stun any fish showing signs of regaining consciousness.

Another potential oversight is found where the recommendations state that fish should be killed following the use of potentially reversible percussive or electrical stunning: methods for achieving this are not provided.

Notwithstanding the lack of specific detail, the wholehearted adoption of the general principles included in these recommendations by the 178 member countries would greatly improve the welfare of farmed fish at stunning and killing around the world.

Welfare Aspects of Stunning and Killing of Farmed Fish for Human Consumption (2012). A4. Aquatic Animal Health Code, 15th Edition, 2012, Chapter 7.3. Available at: www.oie.int/en/international-standard-setting/aquatic-code/access-online/.

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A model for assessing animal welfare in pest control

Innumerable animals are killed or otherwise controlled as ‘pests’ around the world every year. In most cases, the animal welfare impacts of this control have been unknown. Where animal welfare has been considered, there has not been a consistent approach applied. This is despite a desire amongst practitioners and others to see animal welfare concerns addressed.

Driven by the consideration of this issue under the Australian Animal Welfare Strategy, a model for assessing animal welfare impacts in pest control has been developed with input from scientists, regulators and animal welfare, veterinary, pest animal control and livestock sector organisations. The model was first published in 2008. Since then, it has been used to assess the major pest control methods in both New Zealand (Fisher *et al* 2010) and Australia. This second edition brings together the Australian assessment and the model, revised in light of the assessment process.

The model lays out a two-stage scheme for assessing the animal welfare impacts of methods used to kill or manage animal pests. Part A examines the impact of a method on overall welfare and duration of this impact. Part B examines the intensity and duration of pain or distress caused by the killing technique (if applicable). The model takes account of impacts on the target animal only (the individual affected pest) and assumes best practice application of the method.

The assessment of a selection of pest control methods using the model was conducted by an expert panel using information from the scientific literature. The outcome is presented in a series of worksheets and figures showing method scores, with supporting evidence.

The model is intended to provide information for practitioners and regulators on the animal welfare impacts of methods, to encourage the use of more humane methods. It is also intended to highlight where more humane methods should be developed.

A Model for Assessing the Relative Humaneness of Pest Animal Control Methods, Second Edition (2011). Written by Sharp T and Saunders G, Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT. Available online and for download at: <http://www.daff.gov.au/animal-plant-health/welfare/aaws/humaneness-of-pest-animal-control-methods>. The full set of assessments is available at <http://www.feral.org.au/animal-welfare/humaneness-assessment/>.

References

Fisher P, Warburton B, Beausoleil N and Mellor DJ 2010 *How humane are our pest control tools? (09-11326)*. MAF Biosecurity New Zealand Technical Paper No 2011/01. Ministry of Agriculture and Forestry: New Zealand. Available online: <http://www.biosecurity.govt.nz/about-us/our-publications/technical-papers#how-humane-are-our-pest-control-tools>.

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The use of animal-based measures to assess the welfare of broilers

The Animal Health and Welfare (AHAW) Panel of the European Food Standards Agency (EFSA) has recently published a Scientific Opinion which lays out an independent view on the use of animal-based measures to assess the welfare of meat chickens. The report is divided into three main sections. The first outlines the background work that was undertaken for the Opinion, the second discusses the terms of reference given to EFSA by the European Commission, and the third considers how welfare assessment may be further developed when taking into account factors that affect animal welfare, measures used to assess it, and the links between them.

Animal-based measures seek to evaluate the welfare status of an animal directly and to encompass any impact that environmental and management factors may have. Essential attributes of animal-based measures are discussed within the report, such as validity (the accuracy of a measurement to correctly identify a specific welfare consequence, ie sensitivity and specificity) and robustness (the repeatability and reliability of an animal-based measure).

EFSA provides an array of possible animal-based measures that may be used to assess broiler welfare and the strongest animal-based measures on-farm are considered to be: panting, dehydration, lameness, culls on-farm, on-farm mortality, plumage cleanliness, and emaciation. When assessing welfare at the slaughterhouse during meat inspection, the prevalences of the following are considered to be appropriate: foot-pad dermatitis, hock burn, breast burns, breast blisters, emaciation, ascites, and dehydration.

It is not expected that all measures will be used in all situations; the intention is that the list of measures should act as a ‘toolbox’. EFSA states that the measures selected