"will depend on which welfare outcomes (consequences) are to be assessed and the reason for wanting to assess them (eg whether part of a management/breeding strategy or to enforce legislation)".

Various circumstances in which protocols for assessment of broiler welfare may be employed are listed, and include: by a manager of a farm to monitor management decisions; by an auditing or accreditation organisation to check that a farm satisfies the necessary criteria to be part of a quality assurance or labelling scheme; by farmers to check that their farm satisfies animal welfare requirements and to track changes as a result of alterations to management or environment; by a competent/responsible authority to check that a farm satisfies animal welfare requirements according to legislation, and evaluate effects in practice of changes in animal welfare legislation; by scientists during an experiment, so that their results can be compared with the results collected by other scientists.

The methodology and interpretation of the animal-based measures given is not described, and instead the reader is directed to other publications for guidance, eg Welfare Quality® protocols (further information available at: http://www.welfarequality.net). Additionally, EFSA notes that to maintain repeatability and reliability over time requires regular training of assessors to 'recalibrate' them to a reference standard. Other important considerations outlined include ensuring that in assessing the welfare of a flock, the sample of birds examined must be representative and of sufficient size.

A number of animal-based measures have been developed and are currently being used in commercial practice (eg automated detection and scoring of foot-pad dermatitis at slaughterhouses); however, others still require further work. In particular, EFSA notes that: "There are currently no animal-based measures to use as welfare-outcome indicators on-farm or in the slaughterhouse to assess the issues of pain, frustration, boredom and other positive and negative emotional states in the standard broiler. Research in this area is lacking".

EFSA draws the report to a close with conclusions and recommendations for each of the four terms of reference. This Opinion is the latest in a growing series (similar reports were published in January 2012 for dairy cattle and pigs) following a request by the European Commission that EFSA review the use of animal-based measures to assess farm animal welfare. It is expected that similar Opinions will be published for other farmed species.

Scientific Opinion on the Use of Animal-Based Measures to Assess Welfare of Broilers (2012). A4, 74 pages. EFSA Panel on Animal Health and Welfare. EFSA Journal (2012); 10(7): 2274. doi: 10.2903/j.efsa.2012.2774. Available online at: www.efsa.europa.eu/efsajournal.

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New Zealand Code of Welfare for meat chickens

New Zealanders annually consume more chicken than any other meat and over 80 million birds are raised by around 160 poultry farmers every year to supply the domestic market. In an effort to ensure that the welfare needs of meat chickens are met, the National Animal Welfare Advisory Committee (NAWAC) has recently issued a new Code of Welfare: Animal Welfare (Meat Chickens) Code of Welfare 2012.

The Code covers all meat chickens raised for commercial production (both fully housed and those with access to outside areas), from in-shell chicks in the last half of development, to the catching of chickens ready for transport to the processing plant for slaughter. It does not cover the welfare of birds during transport or at slaughter; animal welfare during these times is protected by the Animal Welfare (Transport within New Zealand) Code of Welfare 2011 and the Animal Welfare (Commercial Slaughter) Code of Welfare 2010, respectively. Additionally, meat chicken breeder birds are not included within the scope of this Code.

Persons for whom this Code is intended are all those considered responsible for the welfare of meat chickens. In New Zealand, much of the poultry industry is vertically integrated and meat chicken hatcheries are owned by a small number of poultry processing companies, which also own the feed manufacturers. These companies contract out the rearing of birds, from one-day old to slaughter weight, to other people. The processing companies retain ownership of the birds and they therefore have an overarching responsibility for ensuring that the welfare needs of the chickens owned by them are met. Additionally, individuals responsible for the day-to-day care of meat chickens and any 'person in charge' at a particular point in time are also responsible for bird welfare.

The key areas considered by the Code are: Stockmanship; Food and Water; Shelter and Facilities; Providing for Behavioural Needs; Physical Handling; Disease and Injury Control; Hatchery Management; and Welfare Assurance System. Within these sections, a total of 15 minimum standards are provided, along with example indicators which may be used to show that a standard is being adhered to. Additionally, the majority of minimum standards are also followed by corresponding sections on recommended best practice, to encourage higher standards of welfare.

Also included within the Code is a list of interpretations and definitions of terms used, legislative requirements, and the titles of other Codes of Welfare, Codes of Recommendations and Minimum Standards, and other welfare Guidelines.

Animal Welfare (Meat Chickens) Code of Welfare 2012 (July 2012). A4, 34 pages. National Animal Welfare Advisory Committee, Ministry of Agriculture and Forestry, New Zealand. ISBN: 978-0-478-38897-8 (print), ISBN: 978-0-478-38898-5 (online). The guidelines are available at the MPI's website: http://www.mpi.govt.nz/biosecurity-animal-welfare/animal-welfare, or by emailing: animalwelfare@mpi.govt.nz.

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