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### Strategy for British pig health and welfare

In response to the 'Outline of an Animal Health and Welfare Strategy' published by the Department for the Environment, Food and Rural Affairs (DEFRA), the Scottish Executive and the Welsh Assembly in 2003, the British pig industry has devised a specific strategy for British pig health and welfare. This outlines the measures the industry believes need to be taken in order to achieve a demonstrable and sustainable improvement in pig health and resulting welfare that will contribute to the recovery of the industry and a sustainable rural economy. Ben Bradshaw, Animal Health and Welfare Minister, has contributed a foreword congratulating the pig sector for being so quickly off the mark in developing this strategy.

In his introduction, Stuart Houston, Chairman of the British Pig Executive and National Pig Association, states that improvement in the health and welfare of pigs is one of the most important factors that will determine the sustainability of the sector in the next 10 years. It is estimated that pig disease costs British producers at least £50 million a year. Measures to tackle this will result in welfare improvements and cost savings. The strategy identifies 9 priority areas for action and these are listed below.

- 1) Establish a national structure to provide the focus, drive and planning for a national pig health improvement programme.
- 2) Establish the present health, welfare and disease status of the British pig herd.
- 3) Enhance disease surveillance information available to pig producers.
- 4) Undertake intervention studies on disease control and eradication, and support health improvement programmes with advice.
- 5) Develop nationally recommended biosecurity protocols.
- 6) Develop national protocols for new disease prevention and eradication programmes.
- 7) Quantify risks and consequences of emerging pig issues.
- 8) Enhance training in disease identification and treatment.
- 9) Increase the programme of targeted pig disease research.

In keeping with the opinion expressed in the section on targeted pig disease research, that "welfare and welfare research have in the past been viewed as separate issues to animal health and a more holistic viewpoint is required",

where this document addresses welfare improvements it focuses largely on those that will come from reducing the incidence of disease. Plans are outlined for benchmarking the current health and welfare status of the British pig herd through the collection of data, including population statistics, disease status, the use of medicines and health status. Possible approaches to assessment of other aspects of welfare are not mentioned specifically.

Despite the identification of a large and wide range of topics that need to be addressed in pursuit of benefits for pigs, their farmers and wider society, there is an up-beat, optimistic tone to this strategy. It performs a valuable role in helping to establish priorities for improvement.

**A Strategy for British Pig Health and Welfare** (February 2004). Jointly published by BPEX (British Pig Executive), NPA (National Pig Association), PVS (Pig Veterinary Association) and MLC (the Meat and Livestock Commission). 19 pp A4 paperback. Available free of charge from BPEX, PO Box 44, Winterhill House, Snowdon Drive, Milton Keynes MK6 1AX, UK; <http://www.bpex.org/technical/diseaseManagement/pdf/bpexstrategy.pdf>

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### Controlled atmosphere stunning of poultry: an integrated approach

In June 2004 a workshop was held at Silsoe Research Institute on controlled atmosphere stunning (CAS) of poultry. The 38 invited participants came from academia, UK government departments, welfare organisations and the poultry industry (UK: 23; continental Europe: 4; USA: 1). Fifteen short lectures covered the biology, technology, legal aspects and commercial experience of CAS with perspectives offered by representatives of the UK Farm Animal Welfare Council (FAWC) and the Humane Slaughter Association (HSA). Three breakout sessions were organised which covered the acceptability of CAS in terms of bird welfare and wider societal issues, including legislation. The workshop was sponsored jointly by the HSA, the Universities Federation for Animal Welfare (UFAW), Stork PMT BV and Yara International ASA.

The primary focus of the workshop was poultry welfare during CAS. The critical questions addressed were: what are the most important criteria by which to judge welfare during CAS; are any gas mixtures preferable and should some be forbidden; and how humane is CAS, particularly compared with electrical stunning? The specialised anatomy and physiology of the avian respiratory system, which is highly adapted for efficient gaseous exchange, makes poultry extremely sensitive to inhaled gases and therefore makes it vital that CAS is demonstrated to be humane. The four main types of CAS gas mixtures stun birds by different mechanisms: anoxia (eg N<sub>2</sub> or Ar with < 2% residual O<sub>2</sub>), hypercapnic anoxia (eg 70% CO<sub>2</sub> and

30% N<sub>2</sub>), hypercapnic hypoxia (eg 40% CO<sub>2</sub> in air) and hypercapnic hyperoxygenation (40% CO<sub>2</sub>, 30% O<sub>2</sub> and 30% N<sub>2</sub>, which is a stunning mixture that is followed by a second phase that kills the birds, eg 80% CO<sub>2</sub> in air).

Choosing between these mixtures is arguably the most contentious question about CAS and depends critically upon interpretation of the behavioural and physiological responses, especially in the context of adverse effects and any consequential suffering. Whether or not birds are consciously aware of their feelings is not known. Several speakers interpreted specific behaviours, eg gasping, head shaking, wing flapping and defecation, as indicators of aversion to CAS, while others considered them autonomous responses. Similarly, there was discussion about the meaning of electroencephalogram (EEG) recordings; specifically, to what extent they indicate the level of consciousness throughout the stunning process. A new non-linear statistical technique, correlation dimension analysis, may be helpful since it provides a quantitative measure of the complexity of the EEG waveform; and it has been validated in studies with anaesthetised humans. One participant firmly believed that “a milder death which takes longer is preferable to a quicker but more distressing death” and this was supported by other delegates, while others advocated mixtures that were non-aversive during initial exposure until animals were unconscious. Finally, many of the more detailed studies of behavioural and physiological responses had been carried out in the laboratory with single birds and there was general support for applied studies in processing plants that had been carried out or were in progress, albeit with fewer mixtures tested but dealing with groups of birds. What was clear is that a consensus on the most humane gas mixtures to be used during CAS has not yet been reached.

Conversely, there was general agreement that CAS has several advantages over electrical stunning. It avoids shackling of live birds and has benefits for meat and carcass quality, although these depend upon the mixture used and the frequency of the electrical stunning system employed. Nevertheless, electrical stunning is by far the most common method in use within the EU and could be improved further, eg if operated on the basis of constant current rather than constant voltage. It is also unlikely that the capital costs of CAS could be afforded by small processing plants. The workshop accepted the need to use proven principles of process engineering in designing and implementing CAS, eg the means to measure and control gas concentration, temperature and humidity. Before a final judgment can be made on the utility of CAS, further work is required that assesses the whole system, eg from arrival by the birds at the processing plant to the point of slaughter, and hence integrates the various stressors involved. The experience of processors who already use CAS throughout Europe will be valuable here. Undoubtedly, this will reiterate a common problem in animal welfare science, namely interpretation of

different measures of welfare during exposure to stressors of a disparate nature and duration.

The discussion about the legal aspects of CAS was straightforward. Legislation of poultry stunning and killing balances political, commercial and other interests and assures consumers that no avoidable suffering has occurred. New EU legislation will have to consider current international initiatives by the Office International des Epizooties (OIE) on stunning and slaughter; while in the UK a new Animal Welfare Bill is in preparation. FAWC is currently reviewing the subject of slaughter of white meat animals and welcomes comments from stakeholders. For legislation on CAS to be enforceable, control points should be established that are based on measurable quantities, such as gas concentrations and the achievement of a humane death; although the definition of death itself was also questioned by some participants. At present, there are inconsistencies within the EU over the gas mixtures that can be used with derogations for some mixtures permitted in some countries. There needs to be agreement within the EU on CAS systems that can be used and this should be based on accepted scientific evidence. Several speakers presented results from current projects that have yet to be published in peer-reviewed journals; little encouragement will be needed for these authors to complete their research, given the importance of this topic.

The wider interests of society in CAS were also aired. The participants felt that consumers at large would expect CAS of poultry to be humane and to produce safe meat, trusting government, the poultry industry and retailers to act responsibly. In any debate over stunning methods, CAS, with its attendant benefits, should be publicised as an improvement, not a condemnation of other methods. As a description of a process, controlled atmosphere stunning was preferred given the potential distasteful associations with other terms. There was also a perceived need to prepare informative material about CAS in advance of uninformed criticism.

Overall, this workshop served its purpose of bringing together a group of interested parties to discuss CAS of poultry. Consensus was reached on some, but not all, of the critical questions about welfare. There was enthusiasm and support for a follow-up workshop to attempt to resolve the difficult and complex issues of interpretation of physiological and behavioural responses to CAS and the choice of gas mixtures, now that current projects are coming to a conclusion.

**Report of a workshop held at Silsoe Research Institute in June 2004 on Controlled Atmosphere Stunning (CAS) of poultry.** Copies of the abstracts and presentations can be obtained from the Humane Slaughter Association, The Old School, Brewhouse Hill, Wheathampstead, Hertfordshire AL4 8AN, UK; telephone +44 1582 831919; email [info@hsa.org.uk](mailto:info@hsa.org.uk)

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