

Measuring and auditing broiler welfare

Measuring and assessing welfare outcomes and inputs, ensuring good standards and the challenges of putting these into practice were discussed at a recent international conference in the UK.

The commercial broiler industry is 50 years old this year. It has seen many changes and will doubtless see many more in the next half-century. One aspect though does not seem to change - the importance of good animal husbandry. — Jackie Linden

One hundred delegates from eleven countries came together in Bristol in May for a conference entitled "Measuring and auditing broiler welfare". It was organised by the Langford Continuing Education Unit (part of the University of Bristol) and sponsored by the supermarket chain, Safeway plc. It was that company's financial support that helped to turn the workshop originally planned into an international conference, giving an indication of how seriously UK supermarkets are taking animal welfare issues.

In his welcome address, Dr. Martin Potter of the Royal Society for the Prevention of Cruelty to Animals (RSPCA) emphasised that the provision of all the necessary resources, e.g. housing and management of farm livestock, is only first step in improving the welfare of those animals.

Chair of the Farm Animal Welfare Council (FAWC), Dr. Judy MacArthur Clark, foresees a new era in animal welfare. FAWC has recently turned its attention to consumers, discussing with them aspects of welfare along with the safety and nutritional characteristics of food. The organisation is now connecting

with farmers and food processors to find realistic ways to meet the consumers' expectations. The European Union is showing signs of taking on board Programme 6, concerned with increasing welfare standards for improved food quality. It aims to bring together the various areas of research and to integrate the resulting science into the wider community.

Measuring and assessing welfare outcomes



Dr Joy Mench

Dr. Joy Mench (University of California, Davis) gave an overview of the causes of lameness. Whilst it is well accepted that leg pathology is common in broilers, turkeys and

meat waterfowl, she suggested that the main question is how much affected birds suffer with pain or discomfort. Gait scoring and behavioural studies give some indication but it is still open to discussion the point at which a bird be culled rather than continue to suffer. Lameness is a welfare issue in two respects: the bird's suffering and poor bone development caused by the lack of exercise. A number of poultrymeat marketing organisations, e.g. Kentucky Fried Chicken, McDonald's, have introduced welfare audit schemes recently and we are likely to see a proliferation of such audit schemes in the future.

At the University of Bristol, Dr. Andy Butterworth has been studying the welfare impacts of various diseases and disorders. He has classified these according to severity to the individual bird and general level of incidence and its duration. Lameness problems do not cause high mortality but cause discomfort to the individual. Even a low incidence of a prolonged condition reaches considerable importance when multiplied up by the 40 billion broilers produced each year worldwide.

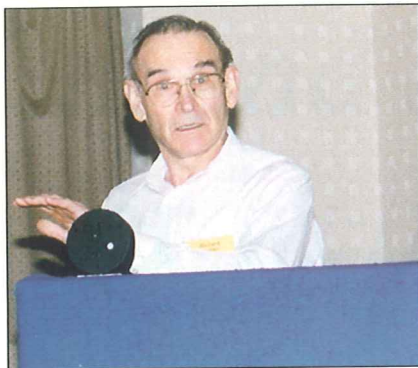
Measuring and auditing broiler welfare



Dr Lotte Berg

Dr. Lotte Berg of the Swedish University of Agricultural Sciences reviewed the causes and symptoms of pododermatitis (footpad dermatitis) and hock burns in her presentation. Along with breast blisters, these are manifestations of contact dermatitis, the main cause of which is poor litter quality. Factors that cause wet litter, e.g. unsuitable litter materials, inadequate litter, insufficient ventilation, leaking drinkers and feed with excess salt, should be avoided.

The role of metabolic conditions in broiler welfare was covered by Professor Richard



Prof. Richard Julian

Julian of the University of Guelph, Canada. He concluded that metabolic diseases, although common in poultry, are not of major significance in commercial broilers. However, Fatty Liver and Kidney Syndrome, Spiking Mortality, ascites and cardiovascular disease could be included in this group of conditions. Work is in progress to assess the importance of these conditions in animal welfare terms.

Dr Paul Hocking (Roslin Institute, Scotland) turned his attention to assessing the welfare of broiler breeders. He considers that hunger is the most important

issue. Feed is restricted in commercial production because allowing free access leads to reduced fertility as well as too rapid growth. The birds appear generally to cope well with feed restriction but feather pecking and cannibalism are recurrent problems on some farms. Researchers are looking for alternative ways of limiting feed intake of these birds as well as ways to reduce their propensity for reproductive failure. Although practised in some countries, alternate day feeding is not permitted in the European Union.

Ensuring good welfare

Sweden's Dr. Berg returned to the lectern to describe how welfare standards are measured and maintained in her country. They form part of a programme aimed at increasing standards of broiler rearing generally and are based on an annual inspection. Ninety-eight percent of the country's broiler growers are signed up to the scheme. Growers operating outside the programme are restricted to a maximum stocking density of just 20kg/m². A stocking density of up to 36kg/m² is permitted for those in the programme, the limit set for each farm depending on the type of house as well as the feeding, drinker and ventilation systems and general levels of management and biosecurity. Dr. Berg admitted that the presence of all these facilities does not necessarily guarantee good bird welfare.

Professor Don Broom of Cambridge University explained the background to the EU Scientific Committee report on broiler welfare and the possibilities for future legislation in this area. Currently, the only relevant Directive is 98/58/EC. Due to be put to the member states in the coming months the report entitled "The welfare of chickens kept for meat production (broilers)". No details were known at the time of the conference. However, it is anticipated that the main welfare problems will be identified as

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those resulting from genetic selection for growth and feed conversion, i.e. leg disorders, ascites, Sudden Death Syndrome and feed restriction of broiler breeders. It is likely that broilers and breeders will be covered separately and that the new Directive will be based on the Scientific Committee report. It will focus more on the outcome than details, post mortem checks may be used for enforcement and incentives may be offered for compliance. There will be some minimum standards for all farms, e.g. covering staff training and record keeping. Recommendations are likely to include a maximum stocking density of 30kg/m², the need for enrichment and measures to stimulate locomotion and ways to reduce leg disorders, e.g. by providing light of at least 20 lux and "a significant dark period".

John Callaghan presented the concerns of the World Society for the Protection of Animals (WSPA) for intensive broiler production, i.e. its global nature, lack of sustainability and poor animal welfare standards (excessive stocking densities, poor leg health and cardiovascular problems).

"Yes, broiler welfare does matter - not least to the broiler", said Professor David Morton of the University of Birmingham. He concluded that chickens are sentient and have the capacity to feel pain, as well as mental distress as they have emotions such as frustration, boredom and hunger. Whether chickens have rights is a hotly debated question on which there is no consensus.



Dr Mike Appleby

In his paper entitled 'Public attitudes and expectations', Dr Mike Appleby of the Humane Society of the United States emphasised that the tremendous increase in output and efficiency in broiler production over the last 50 years has created welfare problems. Most consumers will say that animal welfare is an important issue but they are likely to choose the cheaper option when they do their weekly shopping. They like to think that the retailer has already taken decisions on animal welfare for them, leading Dr Appleby to the conclusion that the industry needs to know more about public perceptions.

Kevin Hawking represented the views of the conference sponsor, supermarket chain, Safeway plc. He confirmed the previous speaker's view that purchasing choices made by consumers do not always reflect those expressed in questionnaires. Retailers are concerned because product safety is - along with taste and quality - part of their brand integrity. A shortage of home-produced,

high-value cuts has led to growing imports. Safeway has its own Code of Practice covering the whole production chain from breeding to processing for each of their ten suppliers at 40 sites in the UK, EU, Brazil and Thailand. Regular audits are carried out to ensure it is being followed.

Measuring and assessing welfare inputs



Prof. Werner Bessai

In the first paper of this session, Professor Bessai of Germany's University of Hohenheim covering stocking density. He reviewed his own and other research on this topic, which indicated that broiler growth rate is generally impaired when stocking density exceeds about 30kg/m². However, conditions in the house can affect this response. Bird welfare has only come into consideration recently. He concluded that high stocking density compromises welfare more through the effects on litter and climatic conditions than on any inhibition of natural behaviour or signs of stress. Older broilers spend much of their time resting so their welfare depends on their being able to find sufficient space and a comfortable temperature. The age and weight of the birds have a greater effect on bird welfare than the liveweight per square metre.

Dr Andrew Walker of the ADAS Gleadthorpe Research Centre aimed to clarify links between feeding and welfare. One direct welfare effect would be vitamin or mineral deficiencies which lead to lameness and thus to pain and/or

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the inability to reach feeders or drinkers. Indirect effects include feeding excess protein, which can lead to wet litter and thus to podermatitis, although other factors are more likely than the feed to cause wet litter in practice. Dr Walker felt that these aspects are easily measured and audited. In future, he foresees aspects of feed presentation becoming mandatory because of their roles in offering a more natural feeding experience for the birds. Relevant aspects could be feeding system (as this affects bird distribution within a house), pellets versus mash feeding, complete versus choice feeding and the provision of forage for pecking.

Work carried out at Silsoe Research Institute into the role of light in bird welfare was reviewed by Dr Neville Prescott. Feather pecking and cannibalism have been controlled by reducing light levels down as low as 5 lux, with only a brief period of darkness to encourage feed intake. Recent research has shown that birds do not choose to be in darkness and that light colour is important, with birds in blue light being less fearful than those in other light colours. We also know that birds perceive light intensity and flicker differently from humans. General recommendations include the provision of light at a minimum of 20 lux for proper eye development although an intensity of 700 lux over a long period of time causes blindness. A dark period is unnecessary from the point of view of welfare although it has the practical advantage of preventing panic in case of a power failure.

Professor Chris Wathes, also from Silsoe Research Institute, posed the question, "What is an acceptable standard of air hygiene for broiler chickens?" Surveys have been carried out into the impact of aerial pollution on bird health. Birds show remarkable tolerance to ammonia and dust and appear unaffected by typical levels in commercial houses in which the standards for the workers are achieved. For the

future, Professor Wather recommends applying the precautionary principle by ensuring that ammonia level is under 10ppm and there is less than 3.7mg/m³ inhalable dust. In many houses, this will mean higher ventilation rates than in current practice.

Professor Tom Humphrey of the University of Bristol discussed

how on-farm biosecurity as a measure to protect commercial broiler chickens from Campylobacter infections. Biosecurity measures can greatly reduce the level of infection in the birds, particularly by discouraging visitors and the provision of clean clothing and footwear for each house and facilities for hand washing. Chlorine in the drinking

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water, incineration of dead birds and clearing the area around the poultryhouse have also been shown to help. Whether *Campylobacter* infection has welfare implications is unclear but a recent survey showed that one farm with a 97% incidence of the disease had higher-than-average rates of mortality and rejects caused by hock burns and foot pad dermatitis, possibly suggesting a stress situation on the farm. Catching crews and transport crates should be regarded as potential sources of infections.

"Forty days of care and good welfare can be undone in three hours of poor transport and handling". That was the opening remark from Dr Malcolm Mitchell of Scotland's Roslin Institute. He and his colleagues have carried out a number of studies on thermal stresses in lorry and trailer transporters. He recommends that temperatures in various locations in these vehicles should be measured and compared with mortality and the general appearance of the birds as they arrive at the processing plant. These actions should help to raise standards of bird welfare and reduce the cost to the industry of these late mortalities.

Steve Wooton of Bristol University reviewed work into the welfare aspects of primary processing. Shackling causes stress because of the act of placing the legs in the shackle and through inversion. The situation can be improved from the welfare point of view by using care, consistent line speed and providing a breast comforter positioned to make contact with all birds and with its lower edge below the bird's eye level. Legislation will soon be introduced so that broilers spend no more than two minutes in this position.

Stunning represents a further challenge on bird welfare. UK legislation requires a constant voltage to induce electro-narcosis but it was discovered some years ago that a system based on



Dr Lucas Noldus

constant current offers more reliable stunning and thus improves welfare. The European Commission is currently anticipating a report from the Scientific Veterinary Committee, which is expected to recommend that the constant current method of inducing pre-stun shock will be included in the long-awaited slaughter Directive.

From the Netherlands, Dr Lucas Noldus of Noldus Information Technology b.v. explained the development of computer-aided methods for studying poultry welfare and behaviour. This is currently being scaled up for a commercial farm. It appears to offer advantages in terms of early detection of abnormal behaviour so that immediate action can be taken to correct the causative factor(s).

The challenges in practice

Dr Lois Philipps of Elm Farm Research Centre explained the development of an agroforestry system for organic chicken production on a commercial scale. The pilot system involves a series of paddocks rotated every 2-3 years, each with a sheltered sandpit for dustbathing and separated by an avenue of trees and wild area. Each house has 1000 birds from 21 to 84 days of age. The farmers admit to being on a steep learning curve. Bird welfare has high priority. The major problem at this stage has been high mortality in the field caused by foxes.

The aim of the paper from Steve Kestin was "to try to stitch it

all together." He and his co-workers at Bristol University have developed a practical method for assessing broiler welfare so that different systems can be compared from the welfare point of view. They have compiled a list of Welfare Assessment Measures (WAMs) and allocated to each a weighting, designated by a panel of experts and based its relative importance to the bird. The WAMs are added together to give an overall welfare index, UWI. Among the WAMs with a high weighting are percent mortality, impaired gait, programmes for thinning and feed restriction and feather score. A field study has been carried out to evaluate the UWI and its validity. It should be regarded as an evolving standard but even the current form is useful for comparing farms and production systems and to identify areas where bird welfare needs to be improved.

Paul Cook (rlconsulting) explained the need for auditing systems and how they work. His company works with food retailers, checking that welfare standards are being achieved and appropriate records kept. He felt that more work needs to be done in highlighting the benefits of audits to the farmer rather than just adding to his workload and penalising him for bad practices. Essential elements for success are clear definitions of good practice and the build-up of trust between farmer and auditor.

In the final paper of the conference, Dr David Main of Bristol University explained that farm assurance schemes have been developed to assure consumers and retailers that legal requirements on food safety, animal welfare and environmental issues are being met. There is a wide variety of schemes from different organisations and they operate in Europe and the USA. Dr Main was confident that the auditing systems are helping to improve welfare standards.

— Jackie Linden, Editor