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Poultry welfare and management: WPSA Working Group Nine

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The introduction of the UK Protection of Animals Act 1911 demonstrates that animal welfare has been of concern for at least a century. The matter came to the fore about 50 years ago, when the welfare of hens in battery cages became an issue. Since then poultry welfare research and the development of superior management and housing systems for poultry have been stimulated by the lobbying of animal welfare organisations along with subsequent policy decisions and legislation. WPSA WG9 was formed in 1972 to encourage scientific studies to inform the poultry welfare debate; its members have positively influenced research and development of welfare-friendly housing systems and husbandry throughout Europe. They have also been active in EU projects aimed at improving the wellbeing of poultry *e.g.* LayWel, EFSA Opinions and Welfare Quality®. Information derived from such projects has influenced EU Directives and national legislation on the protection and welfare of laying hens and broilers, in particular.

Keywords: poultry; welfare; management; housing; research; policy; legislation

Introduction

Although animal welfare concerns have existed for many years, for example, The UK Protection of Animals Act 1911, the matter came to the fore when Ruth Harrison's book 'Animal Machines' was published with emphasis on the degree of confinement and the barren environment of battery cage hens (Harrison, 1964). This was soon followed by an enquiry on behalf of the UK government into the welfare of animals kept in intensive livestock husbandry systems (Brambell, 1965).

During the ensuing years various animal welfare organisations emerged, research groups were set up and legislation was passed to further protect the wellbeing of

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farmed animals. The Farm Animal Welfare Council (FAWC) was established by the UK Government in 1979 to advise Ministers of any legislative or other changes required as they became necessary. FAWC formulated the ideals that became known as the 'Five Freedoms': from hunger and thirst, discomfort, pain, injury or disease, to express normal behaviour and from fear and distress. Subsequently, UK Ministers produced codes of recommendation for the welfare of various livestock species. These codes were intended to encourage stock-keepers to adopt the highest standards of husbandry. In due course EU Directives came into force and applied in all Member States *e.g.* Council Directive 99/74/EC (1999), laying down minimum standards for the protection of laying hens.

Organisations in Europe and beyond have studied and developed animal welfare ideals. Some milestones include:

1. 1988 the EU ratified the Convention for the Protection of Animals kept for Farming Purposes, one of five Council of Europe conventions covering animal welfare
2. 1997 the Treaty of Amsterdam recognised that 'animals are sentient beings' and required 'full regard to be paid to their welfare when policies … are formulated'
3. 2004 the first global conference on animal welfare held in Paris by the World Health Organisation for Animal Health (OIE)
4. 2006 the Animal Welfare in Europe Workshop was convened to consider achievements and future prospects; a main objective was 'to bridge the gap between animal welfare legislation and practical application'.

WPSA European Federation Working Group 9

During the WPSA European Poultry Conference in London in 1972 it was agreed that Working Group Nine (WG9) should be set up to address Bird Welfare in Intensive Poultry Production (WPSJ, 1973 pp. 171-172). Its inaugural meeting was held during 1973 under the chairmanship of Prof Lindgren of Sweden; 14 members were appointed from nine European Countries (WPSJ, 1974 pp. 143-145). The original title was amended to *WG9 on Poultry Welfare* to broaden its remit. Its work encompasses both scientific and applied aspects of behaviour, welfare and husbandry, so in 2005 its title became *WG9 on Poultry Welfare and Management* (WPSJ, 2006 p. 211).

WG9 currently has 36 members from 24 countries; these members have a wide range of expertise in poultry welfare and related subjects. WG9 has been effective in encouraging and contributing to poultry welfare research and the development and management of 'welfare friendly' housing systems (Elson and Sossidou, 2008). Another WG9 activity is the dissemination of research study results on poultry welfare (for further details of all WG9 activities see www.wpsa.com). This is done mainly by the organisation of quadrennial WPSA European Poultry Welfare Symposia. WG9 members are regularly involved in national and EU wide projects *e.g.* LayWel, the EFSA Opinion on laying hen welfare and Welfare Quality®. They are also influential in the testing, development and husbandry of poultry housing systems and equipment, especially in regard to bird welfare. The results of some of these activities have provided valuable information to policy makers and have been carried through into EU Council Directives and Regulations. Some of these matters are explored and discussed in the following sections of this review.

Quadrennial WPSA European symposia on poultry welfare

These well attended key events in the poultry welfare calendar are organised jointly by

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WG9 and the country branch of WPSA in which they are held. Apart from scientists, participants come from policy making authorities, funding bodies, industry and welfare organisations. Hence, the symposia provide excellent opportunities to receive and discuss reports on the latest poultry behaviour, welfare and management research and practice, and for important informal exchanges of information as well as local professional poultry tours.

The invited and submitted selected papers and posters are refereed by experienced scientific members in WG9 and subsequently published. The quality of the material presented is high and covers recent cutting edge research carried out at institutes and on farms in many countries worldwide.

Past European symposia on poultry welfare have been held in Köge, Denmark (1981), Celle, Germany (1985), Tours, France (1989), Edinburgh, UK (1993), Wageningen, Netherlands (1997), Zollikofen, Switzerland (2001), Lublin, Poland (2005) and Cervia, Italy (2009). Copies of most of the proceedings of these symposia are still available. The 9th European Symposium on poultry welfare, the next in this series that has contributed much to this important discipline, will be held in Uppsala, Sweden during June 2013.

The LayWel project

The conditions under which laying hens are kept have been of major animal welfare concern, especially those in barren conventional cages. As new cage designs and alternative 'welfare-friendly' housing systems became available, the need to evaluate the actual welfare status of hens in them on commercial farms also emerged. The LayWel project (2004-2005) was funded via the European Commission's Sixth Framework Programme and national funding from several EU Member States (D, DK, ES, F, NL, SE, UK). Its general objective was to produce an evaluation of the welfare of laying hens in various systems, with special focus on furnished (enriched) cages, and to disseminate the information in all member states of the EU and associated countries. The project took into account pathological, zootechnical, physiological and ethological aspects. Eight of the nine partners of the project were recruited from WG9.

A major achievement of the LayWel project was the compilation of a database collecting data from different housing systems and thus enabling data comparison (Van de Weerd *et al.*, 2005). The project partners recommended that support is given to maintaining the database in the future so that data can be more reliably modelled. As the type of data collected did not often allow a formal statistical analysis, the evaluation of welfare was a presentation of risk factors and advantages and disadvantages of various housing systems. Conclusions were that, with the exception of conventional cages, all systems have the potential to provide satisfactory welfare for laying hens. However this potential is not always realised in practice. Among the numerous explanations are management, climate, design, different responses by genotypes and interacting effects. A second major achievement of the project was the development of feather and integument (skin, head and feet) scoring systems together with comprehensive sets of photographs (Tauson *et al.*, 2005). It is recommended that the integument scoring systems are widely adopted and used in on-going research. Farms should routinely and frequently carry out integument scoring to assist in the detection of damage through pecking, which is currently a widespread welfare problem. The scoring system has been formally validated and found to be effective and precise. In conjunction with this validation a less time consuming version of the scoring system was developed. This was found to be less precise but tending to induce less stress to the birds during scoring (Kjaer *et al.*, 2011).

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Within LayWel, an on-farm auditing procedure was developed in the form of a manual for self-assessment. The manual first explains what is meant by welfare, outlines the relevance of welfare assessment and summarises risks to welfare in the main categories of housing system (Fiks-van Niekerk and Elson, 2005). The second part contains recording forms, with guidance for assessing hen welfare. These enable regular checks of a range of indicators of laying hen welfare to be carried out systematically. The indicators were chosen to be relevant to hen welfare as well as being feasible and reliable to apply in practice.

A series of conclusions and recommendations were made on various aspects of housing systems, behaviour, health and mortality and other matters in relation to bird welfare. Full details of these and all other aspects of the LayWel project can be found in Blokhuis *et al.* (2007) and on www.LayWel.eu.

Implications of the European Food Safety Authority (EFSA) opinion

In 2004 EFSA was invited by the EU Commission to draw up an opinion on the welfare aspects of the various systems of keeping laying hens described in the legislation (Council Directive 1999/74/EC, 1999), in particular, enriched (furnished) cages (FCs). The implications of the use of these systems towards obtaining safe eggs for consumers were also to be considered. According to the mandate of EFSA, ethical, socio-economic, cultural and religious aspects were to be outside the scope of this Opinion. The Opinion was adopted by the EFSA Scientific Panel on Animal Health and Welfare (AHAW) in late 2004 and, having been jointly adopted by the Scientific Panel on Biological Hazards and Scientific Panel on Contaminants in the Food Chain, was published in 2005.

A scientific report formed the basis of the Opinion. In order to prepare the former, AHAW co-opted 10 scientists on poultry welfare and/or egg quality to form the 'Working Group on Laying hens' - Ricardo Cepero, Pierre Colin, Arnold Elson, Linda Keeling, Virginie Michel, Christine Nicol, Thea Fiks van Niekerk, Hans Oester and Ragnar Tauson with Harry Blokhuis as chairman; six of these scientists were members of WG9. Their task was complex and required both the scientific and commercial experience of these experts. They produced a wide range of valuable information on the *pros* and *cons* of FCs of different sizes in particular, as well as other systems, on the status of laying hen welfare, behaviour, health and egg safety issues (www.efsa.europa.eu/en/scdocs/scdoc/197.htm). The different systems were fully technically described and categorised and their names clarified. Major issues covered were bird injuries caused by pecking and cannibalism, beak trimming, bone strength, behaviour restrictions, down grading and contamination of eggs. A risk analysis of these issues in various housing conditions was presented alongside recommendations for future research and development.

The problem of how different indicators should be weighed against each other to come to a final conclusion as to whether or not the housing system promotes good bird health and satisfies the behavioural priorities of the bird is difficult, since there is still no generally accepted methodology for such integration of indicators. Recent research and development and commercial experience had led to considerable improvements in the design of systems, particularly FCs, and improvements in the knowledge of how to manage birds in FCs and non-cage (NC) systems. These solved some of the problems that existed at the time of the earlier EU report on the welfare of laying hens (Scientific Veterinary Committee, 1996), the preparation of which included six members of WG9.

The expertise of WG9 members, together with other scientists, provided EFSA with valuable knowledge originating from different scientific fields regarding various housing

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systems for laying hens and their effects on welfare, health and production. This is a good example of one of the objectives of the WG9.

Welfare Quality®: Science and society improving animal welfare in the food chain

Welfare Quality® was a project funded by the EU (FOOD-CT-2004-506508) under the sixth framework programme (Blokhuis *et al.*, 2010). Forty-four institutes and universities (representing 13 from European countries and four from Latin American) with specialist expertise participated in this integrated research project, which ran from 2004 to 2009.

In an integrated effort, Welfare Quality® combined analyses of consumer/citizen perceptions and attitudes with existing knowledge from animal welfare science and identified 12 areas of concern. To address these, the project concentrated on so-called 'performance measures' that are based on measuring the actual welfare status of the animals in terms of, for instance, their behaviour, fearfulness, health or physical condition. Such animal-based measures reflect the effects of variations in the way the farming system is managed (*i.e.* the role of the farmer) as well as specific system-animal interactions, and relevant resource and management-based measures were included.

Welfare Quality® integrated these measures in standardised welfare assessments and information systems for three main species including poultry, *i.e.* laying hens and broilers, (Welfare Quality®, 2009) on the basis of which farms and processors can be assigned to one of four categories (from poor through to good animal welfare). Harry Blokhuis, an active member of WG9, was the project coordinator while five other members of the group contributed to specific activities.

Poultry welfare and product quality

Little scientific data is available on product quality traits in relation to poultry welfare and management. Most has been provided by recent trials and surveys conducted in different European countries, some of them with the help of WG9 members' expertise (Sossidou and Elson, 2009). Furthermore, farmer and consumer surveys undertaken through European-funded projects resulted in the estimation of the relationship between product attributes and poultry welfare at the farm level, during transportation and at the slaughterhouse (Cziszter *et al.,* 2009)

Poultry welfare in alternative production systems

Research results on the welfare of poultry in alternative production systems compared to conventional cages, such as furnished cages of various group sizes, aviaries, free-range, organic and 'pasture-based', have been discussed in recent literature by WG9 members (Blokhuis *et al.*, 2007, Elson and Tauson, 2011; Sossidou *et al.*, 2011). Moreover, poultry welfare status has been assessed in a variety of alternative production systems under different management practices (Elson and Croxall, 2006 and Sherwin *et al.*, 2010). Examples of specific aspects of welfare enhancement in alternative systems studied by WG9 members include:

a) the use of composted waste as a soil medium in free-range laying hens (Sossidou *et al.*, 2008)
b) the use of aromatic plants in pasture areas (Kosmidou *et al.*, 2008)

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c) the use of different features of habitat in outdoor areas (Sossidou *et al.*, 2010).

Developments in research and legislation on broiler and broiler breeder welfare

It is estimated that about 80% of the broiler chickens world-wide and 90-95% of the broiler chickens in Europe are the so-called 'fast growing' breeds that achieve a weight of about 2.5 kg in 42 days or less, and are generally housed indoors. Selection for fast growth and efficient feed conversion, in combination with intensive housing systems has led to a number of welfare problems such as heart and leg conditions, behavioural restriction and contact dermatitis (Robins and Phillips, 2011). These issues have been addressed in peer reviewed papers from the 1980s onwards. In 2000 the EU Scientific Committee for Animal Health and Animal Welfare (SCAHAW) produced a report on the welfare of chickens kept for meat production (broilers) (SCAHAW, 2000). It was concluded that selection for growth and feed conversion had led to negative side effects on broiler welfare such as leg problems, ascites and sudden death syndrome. Moreover, it was agreed that high stocking densities had a negative effect on broiler welfare, but that individual farm management played an important role in that effect (SCAHAW, 2000).

Specific legislation for broilers at a European level came into force in June 2007, laying down the minimum rules for the protection of chickens kept for meat production (Council Directive 2007/43/EC, 2007). Besides requirements for administration, light intensity and duration, air quality and training of the farmer, the Council Directive restricted the maximum stocking density for broiler chickens. If all requirements are fulfilled and the mortality is kept below the maximum level stated in the Directive, farmers can keep their birds at up to 42 kg/m^2. Individual Member States may have additional welfare legislation, like Sweden and Denmark where the prevalence of foot pad lesions must not exceed a certain level, if birds are to be kept at the maximum stocking density (Algers and Berg, 2001; Berg and Algers, 2004). Dutch farmers must not exceed a maximum agreed level of hock burns in order to keep their birds at 42 kg/m^2, and this will probably be replaced by regulations on foot pad lesions in the future.

In 2010, EFSA published a scientific opinion on the influence of genetic parameters on the welfare and resistance to stress of commercial broilers (EFSA, 2010a). It concluded that there are serious welfare concerns about skeletal disorders and contact dermatitis. The prevalence of ascites is thought to have decreased over the last 10 years, after it was included in the selection criteria of breeders. However, it was stated that there was a lack of reliable data on the incidence of welfare issues in different countries, for different breeds and different housing systems. WG9 members were involved in the preparation of both the 2000 SCAHAW report as well as the 2010 EFSA report.

Research in the field of broiler breeder welfare has mainly focussed on one key issue in broiler breeder welfare, *i.e.* the consequences of the feed restriction during rearing of the parent stock of the fast growing broilers (De Jong and Guémené, 2011). The first scientific papers addressing this issue appeared in the late 1980s. Later, other welfare issues were addressed, such as aggressive mating behaviour and environmental enrichment (De Jong and Guémené, 2011). One chapter of the SCAHAW report on the welfare of chickens kept for meat production (broilers) (SCAHAW, 2000) addressed the welfare of the breeding birds. It was concluded that the severity of feed restriction could be reduced without adverse welfare consequences and that the birds should be housed in such a way that mutilations were not necessary (SCAHAW, 2000). In 2010,

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EFSA published a scientific opinion on welfare aspects of the management and housing of the grand-parent and parent stocks raised and kept for breeding purposes (EFSA, 2010b), drawing the same conclusions with respect to feed restriction and mutilations. In addition, issues like environmental enrichment, mating aggression, slaughter and culling and disease and biosecurity have been addressed (EFSA, 2010b). Although some EU Member States have their own legislation with respect to broiler breeder welfare, there is no legislation at the European level yet. Members of WG9 were involved in the preparation of the EFSA scientific opinion on broiler breeder welfare.

Interaction with other WGs

WG9 interacts with other WPSA working groups as the need arises. The group has held joint sessions with WG3 on Poultry Breeding and Genetics at European Poultry Conferences and has recently developed collaboration with WG11 and the Mediterranean Poultry Network in order to further disseminate and transfer new knowledge and technological development on Poultry Welfare and Management (Yalçin and Sossidou, 2010). During 2011, at the annual meeting of WG9 held in Berne, representatives of the two groups exchanged ideas for the organisation of possible future common activities such as summer schools and training seminars. In addition, certain members of WG9 also serve on other WPSA working groups *e.g.* WG1 Poultry Economics.

Conclusions

Poultry welfare has been an important issue in several countries, especially in Europe, for about 50 years. Behaviour and welfare studies as well as housing and husbandry R & D and application, EU projects and legislation, have all been influential in improving the welfare protection of poultry, especially laying hens and, more recently, broilers. WPSA WG9 has played an important role in all these spheres and should continue to do so within and beyond Europe.

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