

## SCIENTIFIC OPINION

### **Scientific Opinion on welfare aspects of the management and housing of the grand-parent and parent stocks raised and kept for breeding purposes<sup>1</sup>**

**EFSA Panel on Animal Health and Welfare<sup>2,3</sup>**

European Food Safety Authority (EFSA), Parma, Italy

#### SUMMARY

On request of the European Commission, the European Food Safety Authority (EFSA) prepared a scientific opinion on welfare aspects of the management and housing of grand-parent and parent stocks raised and kept for breeding purposes.

Over the second half of the 20th century, the growth rate of commercially-produced broiler chickens has increased at the same time as the feed conversion ratio has been reduced. It has been shown that this improvement is largely the result of genetic selection. It is generally accepted that many of the welfare problems in broiler breeders are caused by genetic factors, environmental factors and interaction between them. The limited number of breeder companies that provide the various strains of broilers used worldwide and provide the widely used guidelines for the housing and management of the grand-parent and parent stocks have the opportunity to influence the welfare of broiler breeders.

The comprehensive work related to this mandate was carried out in close collaboration with the working group on the influence of genetic parameters on the welfare of commercial broilers. It involved collecting available data from the industry (technical hearings), information provided by stakeholders (technical meeting and web-consultation) and from a public call for data. One of the

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1 On request the European Commission, Question No EFSA-Q-2009-00505, adopted on 24 June 2010.

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3 Acknowledgement: The Panel wishes to thank the members of the Working Group on the welfare aspects of management and housing of grand-parent and parent stocks raised and kept for breeding purposes: Joerg Hartung (Panel member, Chair), Linda Keeling (Panel member, Rapporteur), Georgios Banos, Charlotte Berg, Ingrid de Jong, Virginie Michel and the members of the Working Group on the influence of genetic parameters on the welfare and the resistance to stress of commercial broilers: David Morton (Panel member, Chair), Toni Oltenacu (Panel member, Rapporteur), Cécile Arnould, Lisa Collins, Paul Hocking, Elizabeth Le Bihan-Duval and Poul Sorensen for the preparation of this opinion. The Panel wishes to thank EFSA's staff members Franck Berthe, Milen Georgiev and Tomasz Grudnik for the support provided to this EFSA scientific output.

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other major sources of information referred to in this report is the scientific literature search by systematic review under Article 36.<sup>4</sup>

In the opinion the following key points were considered - the housing and management of broiler breeders (parents and grand-parents) in EU member states; the health and welfare consequences; the use of indicators in practice and a risk assessment on the impact of housing and management on the welfare of broiler breeders, including genetic selection influences.

In general, parent stock management manuals supplied by the breeding companies are used as guidelines when constructing houses or establishing management practices for breeder flocks. Nevertheless, aspects such as national legislation, regional climate or local traditions lead to some specific differences between countries and companies. As a result, there is little overview and no quantitative data and on what husbandry and management systems are used in Europe. Housing and management of grand-parent stock is in general similar to that of the parent stock, but with slightly lower stocking densities and greater emphasis on biosecurity and vaccination. Cage housing can be used for grand-parent stock, but it is rare.

At the hatchery, chickens that will become parent and grand-parent stock undergo several procedures before they are transported to the rearing farm. At the hatchery, birds are sexed and commonly vaccinated. They may also undergo one or more mutilations (e.g. despurring, detoeing, toe clipping, beak trimming) which have been introduced to reduce injury to other birds in the flock, e.g. feather and skin damage. Mutilations are carried out depending on the country or at the request of the customer and it is recommended that quantitative information on the frequency of the different types of mutilations and the methods used in member states should be collected. Furthermore, the consequences for welfare and the effectiveness of mutilations are unknown and some seem to have become routine for traditional reasons and may no longer be required. It is recommended that no mutilation with an effect on welfare as severe as those resulting from cutting off toes or dubbing the comb should be carried out unless justified by evidence for substantial and unavoidable level of poor welfare to birds. Mutilations should be carried out by trained personnel using the least painful methods.

From day one to approximately 18 weeks of age (rearing period), young broiler breeder birds are kept in single-sex flocks of about 2,500-3,000 birds, in special light regimes, under high biosecurity requirements. Records are kept on their origin, growth rate, feed consumption, daily mortality and any intervention. At the age of 16-21 weeks the birds are transferred to the production farms where they stay until they are about 60-65 weeks (production period). In most cases natural mating is used and, although aggression by males during mating can cause welfare problems, the extent of the injuries or their prevalence is unknown. Management influences this, but there may also be a genetic component that could be used to reduce it.

The amount of feed supplied during rearing is restricted in accordance with set programs limiting growth rate and body weight to maintain good health and achieve desired levels of fertility. Although there is a lack of data on the effect of feed restriction in just broiler breeder males and more research is required. Feed restriction causes welfare problems associated with hunger and leads to increased competition around feeding time, which may in turn lead to injured birds. But not restricting feed intake will also cause welfare problems in standard birds because of the high body weights. Alternative feeding strategies, like diet dilution and/or appetite suppressants, do not clearly benefit broiler breeder welfare. There is a genetic component as the degree of restriction necessary, for

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<sup>4</sup> Lefebvre D, Tatry MV, Shepers F, Rodenburg BT, Huneau-Salaün A, Allain V, 2010. Toward an information system on broiler welfare: Genetic selection Aspects (TOGA). Technical report submitted to EFSA. Available at: <http://www.efsa.europa.eu>.

example for mini breeders, is lower than for standard breeding birds. Nevertheless, the degree of restriction has been increasing over the past few decades in response to genetic selection for higher growth rates. It is recommended that birds requiring less feed restriction should be selected as future breeders even if this may involve reduced selection pressure on high growth rates. To track improvements over time, the trend in the degree of feed restriction required to maintain broiler breeder bodyweight targets should be monitored.

Most of the research for welfare indicators has been carried out with broilers or laying hens. Although many may also be used as indicators of welfare in broiler breeders, animal-based welfare outcome indicators for use during monitoring or inspection of grand-parent and parent stocks, as well as for monitoring trends over time should be developed. For example, it is recommended that animal-based welfare outcome indicators related to feather and injury scoring should be developed and used to assess the level of damage related to aggression during mating, competition for feed and spiking (replacement of old males by young mature males in the flocks).

Broiler breeders have a need for a physical environment that provides comfort and security. Perches may be a component of this and they should be provided at an early age as it increases the chances of meeting the behavioural needs of the birds as well as promoting learning to perch and using raised nest boxes. Sufficient perch/platform space should be provided during rearing so that birds learn to navigate in a three-dimensional space and later during the production period to provide space for all those birds that use them. Even if low percentages of broiler breeder parent and grand-parent stock in Europe are housed in cages, the cages shall fulfil the same requirements for litter, nest box and perches as agreed upon for laying hens. Environmental enrichment has been shown to be beneficial compared to barren environments. In general commercial farms do not use any environmental enrichment and more research is needed on the practical application of environmental enrichment e.g. cover panels, for broiler breeders on European production farms.

In broiler breeders, there is no systematically collected data on health issues such as leg disorders and contact dermatitis, so their exact prevalence is not known. Even though leg weakness is not commonly observed due to the feed restriction, the same musculoskeletal lesions as those observed in broilers have been reported in broiler breeders. The prevalence of leg weakness and contact dermatitis could be monitored using modified versions of the standardised scoring systems developed for broilers. There is also a lack of surveillance data for many infectious diseases. However, deviations from normal water and feed up-take (time, pattern and amount) are interpreted as the first indicators (early warning) of possible disease.

Some birds are culled on farm during the rearing and production phases, for selection reasons (birds not laying or reproducing) or because they are sick or injured. At the end of the production period (60-65 weeks of age), the remaining birds are usually caught, crated and sent for slaughter at commercial slaughterhouses. In some cases, male breeders are not slaughtered but culled and discarded. Transport crates (size and height), should be designed, and slaughterhouse facilities equipped for adult broiler breeder birds (parent stock). If slaughter methods are not adapted to the higher weight of the birds, welfare problems are likely to occur e.g. shackling may injure the birds and there may be inadequate electro stunning due to incorrect voltage and current. Training for those who cull broiler breeders should be put in place and recording animal-based welfare outcome measures, such as number of birds dead on arrival at the slaughterhouse, should be introduced.

In the risk assessment, the probability of exposure to a hazard and the magnitude of the effects (consequences) of that exposure were estimated. Four parameters were scored to assess the importance of a hazard, these were the intensity of the adverse effect that the hazard causes, the duration of the adverse effect, the probability of an adverse effect given exposure to a hazard and, finally, the probability of exposure to the hazard. The top five overall hazards according to risk scores were identified as barren environments, high stocking density, fast growth rate, feed restriction and low light intensity. These five hazards were ranked highly either because the adverse effects are

intense and/or prolonged, and/or the probability of the birds being exposed to these hazards is high and the probability of experiencing adverse effects when exposed to these hazards is high. A hazard's risk score ranking does not necessarily correlate with its welfare impact or magnitude ranking (although there is reasonable similarity between the risk score and welfare impact profiles. The magnitude and welfare impact scores for the categorical groups (production and rearing, males and females, fast and slow growing) of broiler breeders were estimated. The trend in the top five for these different categories were similar, despite the groups being chosen specifically because of their differences. In the assessment process greater uncertainty was identified in the conditional probability of exposure than intensity. This is likely to be a true reflection of knowledge in the field as there is relatively more information available describing adverse effects; their intensity and duration, than there is quantifying how extensive the problem is.

It was recognised by the experts that probabilities vary from region to region, country to country and between different types of farming system and so probability estimates consequently had large ranges. Routine data collection across Europe would help to make these estimates more accurate and this is recommended.