

The Director

Select Committee on the use of battery cages for hens in the egg industry,
Parliament House,
Macquarie Street,
Sydney NSW 2000



16th September 2019

Dear Sir/Madam,

RE: Further response to Senate hearing on inquiry into the use of battery cages for hens in the egg production industry

On behalf of the Australasian Veterinary Poultry Association, a response is provided to the two questions taken on notice during the hearing held on 13 August 2019.

1. With respect to the question posed by the Chair in relation to the impact of space allowance for hens housed in conventional cages on mortality, only a single research paper could be found that compared similar densities to those cited by the Chair (350cm² to 650cm²) and specifically considered the impact of space allowances on mortality.

Summary:

- The paper by Rech et al (2010) was the principle source cited to inform the question of conventional cage stocking density in the Farmed Bird Welfare Science Review commissioned by the Victorian government to inform the development of the Standards and Guidelines for Poultry. Unfortunately, the full text version of this paper is only available in Portuguese. Therefore, the specifics of the research, including the cage design and mortality cannot be evaluated in comparison to Australian cage infrastructure and outcomes.
- The study compared space allowances of 563cm², 450cm² and 375cm² for hens in conventional cages. There was a direct relationship between space allowance and feed intake, egg weight and mortality that was independent of the breed of the hen. The hens with the lowest space allowance had the highest mortality.
- Other papers (eg. Guo et al, 2012) can be found that have considered space allowances for hens in furnished cages. However, these papers cannot be considered as necessarily relevant to space allowances for hens housed in conventional cages, as the space allowance per hen would be less than 650cm² due to the space occupied by cage furnishings and enrichments. For this reason, internationally, hens are afforded a minimum of 750cm² per hen when housed in furnished or enriched cages.

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- In Australia, hens housed in conventional cages are afforded a space allowance of 550cm² per hen. An exact equivalent space allowance of 550cm² was not considered as part of this research. However, the closest to the current requirements was the highest space allowance of 563cm² per hen. Therefore, it can be deduced that current Australian legislation in relation to cage density was likely based on consideration of available research with respect to animal welfare outcomes.

2. The Honorable Mark Pearson referred to a paper by Greg Parkinson of the Animal Welfare Institute in Victoria, citing “55 percent of fractures and breakages of bones in battery cages” as a “direct consequence of osteoporosis” and stated that this is “not a problem for the other systems”.

A review of the research paper/s referred to by the Hon. Mark Pearson does not at all substantiate that caged housing systems result in a high and unacceptable level of bone fractures relative to non-caged systems. The work completed by Parkinson and Cransberg of the Victorian Institute of Animal Science was reviewed and a summary of the research is provided.

Summary:

- The 55% figure from the Parkinson paper was derived from a sensitive indicator of osteoporosis in laying hens, namely rib swelling and varying levels of rib deformities on a scale of 1-5. It does not represent the overall incidence of bone fractures as a direct result of underlying osteoporosis in association with caged housing systems.
- Non-caged housing systems were not compared to caged systems for the purposes of this particular research trial.
- The trial was performed on a small number of birds housed in a controlled environment trial facility to mimic commercial conditions but was not an assessment of bone fractures or the welfare of commercial caged layer flocks.
- The research confirms that bodyweight gain in the early lay period is strongly correlated to the severity of the osteoporosis lesions and the conclusion was that the emphasis needs to be on ensuring correct feeding and achieving required bodyweight gain in accordance with the breed targets and profile in the early lay period in order to minimise the risk of osteoporosis for laying hens.

Research outcomes from the Parkinson papers:

- Two papers could be located by Parkinson that relate to osteoporosis in laying hens.
- Cransberg et al (2001) evaluated the impact of bodyweight gain and egg production relative to the breed standard and correlated these differences with level of osteoporosis in the flock. Osteoporosis was strongly correlated with bodyweight and production parameters, leading the authors to conclude that the “close association between the development of osteoporosis in early lay and drain of production supports the premise that production-induced osteoporosis is much more influential in the induction of bone fragility in caged hens than the confinement and reduced mobility associated with the cage system.
- An abstract published by Parkinson and Cransberg in the proceedings of the 2002 Australian Poultry Science Symposium, entitled “Do osteoporosis and skeletal undermineralisation limit egg production”, reviewed the available literature relating to osteoporosis in laying hens and suggested that an “examination of environmental interactions which occur between the onset of lay and the peak of egg production will help in devising management strategies to prevent the problem of osteoporosis”. This paper states that “57% of the birds had a rib abnormality score of 1-5, whilst 29% had a score of 3-5”. Birds were scored from 0-5 based on an “assessment of deformity and

swelling of the costochondral junction of the rib cage at 45 weeks of age” and the level of severity with 5 being the most severe lesions. This was not a primary assessment of bone fractures but used as an indication of the level and severity of osteoporosis in the flock. This paper confirms that osteoporosis in the laying hen occurs due to loss of structural bone in early lay and this process occurs prior to the accumulation of medullary bone under the influence of oestrogen. Therefore, it is rightly hypothesised that this period in early lay is critical for preventing development of osteoporosis. In this study, those birds that had severe rib lesions, indicative of more severe osteoporosis, experienced a loss of bodyweight between 29-31 weeks of age. The reason for this bodyweight loss needs to be understood but is not related to the housing system per se.

Research outcomes relating to osteoporosis in caged systems:

- There have been numerous papers assessing osteoporosis and bone fractures in laying hens as a specific welfare issue. This issue is also contentious with respect to which housing system provides superior welfare outcomes for laying hens. Genetics, nutrition and the environment may all contribute to the incidence of bone fractures.
- A chapter in the book “Welfare of the Laying Hen” by C.C Whitehead of the Roslin Institute (Edinburgh) entitled, ‘Skeletal disorders in laying hens: the problem of osteoporosis and bone fractures’ presents a review of the research findings on osteoporosis and the relationship with the housing system. This chapter refers to a paper by Gregory et al (1990) which found that “the incidences of old breaks, particularly in the furculum and keel, were higher with aviary and free-range systems so the total fracture incidences did not differ greatly between different housing systems”. Two other papers (Freire et al, 2003 and Moinard et al, 2004) cited found 73% and 74% keel bone fractures respectively in non-caged systems with perches. The review led the author of this chapter to conclude that “allowing birds more exercise in alternative systems will improve bone strength, but this does not necessarily improve bird welfare”. Furthermore, “abolition of battery cages is thus not a simple panacea for welfare problems, and it is apparent that alternative or additional approaches to minimise bone fractures are needed”.

Yours faithfully,

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