

Submission to the Poultry Welfare Guidelines Public Consultation.

I was involved in animal breeding research at the then Poultry Research Station (Seven Hills, NSW) for 20 years (1962 to its closure in 1982). I have had no contact with the Australian poultry industry since then.

In order to effectively breed for increased egg production, it is essential for the hens to be individually housed. Prior to the advent of cages, hens were housed in groups and trap nested to obtain individual egg productions. Unfortunately, more aggressive hens tend to lay more eggs because they are under less stress than less aggressive hens. This is due to the pecking order. The lower a hen is in the pecking hierarchy, the more she is pecked by other hens leading to greater stress levels. This causes her to lay below her genetic potential which results in selection causing an undesirable increase in flock aggression levels.

I can recall a paper that I read sometime between 1962 and 1965 or so. This paper compared the egg production levels of two flocks when housed either together or separately in pens. Individual egg productions were recorded using trap nests. One flock had a high level of aggression (the H line) whilst the other flock had a low level of aggression (the L line). When housed separately, the L line hens had the superior egg production. However, when housed together, the H line hens had a superior level of egg production to their L line companions. This experiment conclusively showed that as the stress level to which a hen is exposed increases, her rate of egg production decreases. (Being retired, I don't have the reference to this paper: it was most likely published in either *Poultry Science* or *British Poultry Science*. A computerized search of *Animal Breeding Abstracts* could find this paper.)

It is highly desirable to encourage poultry geneticists to select for reduced aggression in layer hens in addition to egg production parameters.

It may be possible to select for reduced aggression using some biochemical parameter. A physiologist may be able to assist. I recall one paper where the author stated that he/she was able to give an aggression score to individually caged hens based upon observing whether she pecked (or was pecked by) the hens adjacent to her and the three hens housed opposite the rear of her cage (on the other side of the drinking nipples). Alternatively, once the best 30 – 50% (or so) of hens have been selected for superior egg production traits, they could then be housed in groups in pens. One would then cull the most aggressive 5% to 20% (or so) of these hens after the pecking order has become established. A poultry ethologist may be able to assist.

The presence of salmonella in eggs (a health risk) is mostly (if not invariably) associated with barn/free range eggs. When an egg is laid, as the egg cools, it absorbs air through pores in the shell. If, whilst cooling, an egg is in contact with salmonella contaminated material (such as bird droppings, soil, etc), salmonella bacteria can be absorbed into the egg. Eggs laid in cages roll away from the hens, rarely (if ever) coming in contact with any contaminated material. Thus there is a health risk associated with the consumption of non-cage eggs.

Hens have been bred for many (60+?) generations for improved egg production traits whilst housed in cages. As in Darwinian evolution, selection has produced (and is still producing) hens genetically adapted to living in cages.

Attachment A contains the copy of a research paper in which four housing systems were compared (conventional cages, furnished cages, barns and free range. Whilst the comparisons were mainly non-significant statistically, the lowest prevalence of problems occurred in hens housed in furnished cages. Furnished cages give hens more freedoms such as the potential to nest, roost, scratch and stretch by providing a small nesting area, perches, a scratch area and greater freedom of movement. Eggs from hens housed in furnished cages would also have a lower incidence of salmonella (if at all). These results suggest that poultry farmers should be encouraged to house their layers in furnished cages rather than in conventional cages, barns or free range.

It is essential that recommendations as to the type of housing be based on scientifically valid research and not on subjective and/or emotional feelings.

. When a strange person enters a shed housing caged layers, the hens can become agitated. For this reason, large egg production facilities usually dress their workers (and visitors) in the same outfit, often a white boiler suit or a white laboratory coat.

Attachment B provides information on commercially available furnished cages in Europe.

Sections GA10.2 and GA10.3 of your draft poultry welfare guidelines refer to the use of carbon dioxide in gas mixtures recommended for euthanasia. My concern is that carbon dioxide may not be a

stress/pain free method of euthanasia. Whilst at the then Poultry Research Station, the exhaust gases from a motor vehicle were used to euthanize unwanted day old chickens. This method worked perfectly when the exhaust gases contained carbon monoxide. However, when a recently acquired vehicle was used, it was found that the chickens were being cooked alive. This was due to the exhaust gases containing carbon dioxide in the absence of carbon monoxide.

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Further to this submission, I wish to add the following comment regarding the increased incidence of salmonella in eggs that is largely (if not entirely) associated with non-cage eggs. As is done with some other products destined for human consumption (i.e. warning, this product may contain traces of nuts, wheat etc), serious consideration should be given to requiring non-cage eggs to carry a health warning that they may contain salmonella.

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I should have noted that a survey of the incidence of salmonella contamination in cage, barn and free range eggs is needed to provide reliable comparative statistical information on its incidence in order to decide whether any eggs require a warning. One should estimate the probability of there being at least one contaminated egg in a one dozen pack.

Bert Sheridan