

POULTRY WELFARE STANDARDS AND GUIDELINES – LAYER HEN CAGES

SUPPORTING PAPER PUBLIC CONSULTATION VERSION

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ISSUE

Whether poultry should be confined in cages and how the welfare of caged poultry can be enhanced.

TERMINOLOGY

There are a number of cage systems used to confine poultry. The major systems available are:

- Conventional cages – hens are housed indoors, in groups of up to nine hens, usually in multi-tiered systems with wire mesh floors.
- Colony cages - Cages are larger, housing a greater number of hens (e.g. 40-100), and may include a perch.
- Furnished cages – Cages that contain furnishing such as nest boxes, perches and/or scratch-pads.

OVERALL RATIONALE FOR CAGE SYSTEMS

Animal welfare can be assessed using three different frameworks, based on measures of biological functioning, affective state or natural living (Hemsworth et al., 2015).

The biological functioning framework accepts that welfare problems will result from poor adaptation of an animal to its environment. Severe challenges may overwhelm an animal's capacity to adapt and may result in death, while less severe challenges may have impacts on growth, reproduction and health (Hemsworth et al., 2015).

The second framework assesses the affective (or emotional) state of the animal. Affective states may be positive or negative. A positive affective state is linked with a predominance of positive experiences, such as the experience an animal has when it engages with a rewarding behaviour (Mellor, 2015). Affective states may be assessed using such measures as preference testing, behavioural observation and physiological testing (Hemsworth et al., 2015).

The third framework uses the concept of natural living. It assumes that the welfare of an animal is better when it can express its normal patterns of behaviour. This approach draws attention to the potential welfare benefits of providing opportunities for animals to engage in natural behaviours. However, the concept of 'natural' is often poorly defined, and this framework does not provide a rigorous scientific basis for welfare assessments (Hemsworth et al., 2015).

Overall quality of life, which is equivalent to animal welfare status, is the sum of negative and positive experiences over a period of time (Green and Mellor, 2011). Animal managers should endeavour to minimise negative animal welfare experiences and promote the opportunity for positive animal welfare experiences that contribute to positive mental states. The overall assessment of the welfare outcome for birds in different production systems is complex with significant overlap possible in net welfare state between enterprises with different housing systems. No single system is innately better in delivering welfare outcomes.

The confinement of birds generally is fundamental for the operation of poultry enterprises for the following reasons:

- It permits the close health management and inspection of animals on a regular basis, and the removal of ill or injured birds for treatment or euthanasia
- It allows the efficient provision of feed and water
- It allows the efficient management of adverse weather risk, temperature and ventilation
- It allows the efficient provision of biosecurity for the prevention of disease introduction
- It ensures predator risks are controlled
- It improves control of the environmental impacts. Poultry enterprises are constructed to allow efficient collection of manure and provide protection to surrounding land, surface and ground water resources.

All systems of poultry housing have both advantages and disadvantages for poultry welfare. It is difficult to compare different housing systems due to the wide variation across systems. Specific design features within systems may have greater effects on bird welfare than the differences between the systems *per se* (Widowski et al., 2016a). Management of intrinsic factors within each enterprise including housing design, stockmanship, rearing conditions and strain of bird will impact on bird welfare (Widowski et al., 2013). The EU Laywell System (Laywel, 2006) provides a framework for welfare assessment acknowledging that each flock and each farm is unique and welfare problems may also vary from day to day.

Positive states are more readily achieved for some behaviours in non-cage systems but implementation of less confinement will not alone guarantee an improvement in bird welfare. The nutrition, environment and health domains are important and contribute to the affective experience domain (Green and Mellor, 2011). Non-cage systems allow poultry to express a wider behavioural repertoire (foraging, scratching, dust bathing, wing flapping, perching, and nesting) but expose poultry to greater risks of feather pecking, predation, smothering by other birds, climatic extremes, accidents, parasites, bone breakages and other diseases with resultant higher sickness and deaths. It is acknowledged that there are strong views that seek to improve the range of bird behaviours possible through reduced confinement. Current market force (consumer choice) supported by clear labelling standards is promoting the production of barn and free range produced eggs but cage eggs still represent about half the retail fresh egg market volume.

The focus of the standards and guidelines is on achieving acceptable welfare outcomes for birds in all commercial systems while also taking into account environmental, food safety, financial and social considerations.

RECOMMENDATIONS

The drafting group considered current scientific knowledge and practice and agreed that standards were required to underpin poultry welfare for cage systems.

1. STOCKING DENSITY – CAGE SYSTEMS

RATIONALE

The stocking rates proposed do not allow birds to express some innate behaviours but the regulated confinement of birds is an important and acceptable method for the management of some welfare risks for poultry.

RECOMMENDATIONS

The drafting group considered current scientific knowledge and practice and agreed that a maximum stocking density is required. This measure also applies to colony cages.

ANIMAL HEALTH AND WELFARE CONSIDERATIONS

Space Allowance

There is evidence from Europe that furnished cages which comply with the EU Directive (199/74/EC) can achieve the lowest death rates of commercial poultry housing systems for layer hens (3% cumulative mean mortality) and free range the worst, at up to 22% (Elson, 2015). However, there is little information on the effects of space allowance on mortality in larger flocks (30 hens or more).

The literature on the effects of space allowance in layer cages shows that in general as floor space decreases, within a range of 650 to 300 cm² per hen, bird welfare generally decreases, as measured by either higher mortality, lower egg production and body weight or poorer feed conversion (Widowski et al., 2016a). Dawkins and Hardie (1989) showed that group-housed hens require an average of approximately 475 cm² for standing, 540-1005 cm² for scratching, 771-1377 cm² for turning, 652-1118 cm² for wing stretching, 860-1980 cm² for wing flapping, 676-1604 cm² for feather ruffling and 814-1270 cm² for preening. These figures are above the current space allowances in legislation in Australia, being 550 cm² for an average layer in conventional caging. Where birds are kept in groups and less space is available, some behaviours such as ground-scratching, turning and preening become compressed into a smaller space, whereas feather-ruffling, wing-stretching and wing-flapping do not, possibly because wings can be flapped above the other birds (Dawkins and Hardie, 1989). Space allowance has been found to have an effect on behavioural and physiological measures used to assess welfare, although the effects of space and group size are often confounded (Downing, 2012).

REVIEW OF NATIONAL POLICIES AND POSITIONS

The current Australian **Model Code of Practice for the Welfare of Animals – Domestic Poultry 4th** edition (2002) provides the basis for the proposed standards.

The **Australian Veterinary Association (AVA)** policy 12.2 states:

“Commercial egg production systems should provide for the health, nutrition, and psychological wellbeing of the hens. Continuing scientific research into hen welfare in different production systems under Australian conditions is essential.”

The AVA also supports guidelines that include: *“Caged, barn, free range and organic egg production systems have advantages and disadvantages, and no single management system caters entirely for health, biosecurity, food safety, environmental sustainability or welfare outcomes”.*

RSPCA Australia has a specific policy standard on layer hens that forms part of the RSPCA Approved Farming Scheme. The RSPCA does not support cage systems and the website states that:

“The RSPCA has developed standards for layer hens. The Standards allow for higher-welfare indoor and outdoor systems which focus on providing for hens behavioural and physical needs.

*RSPCA Approved hens have more space than those raised in conventional systems. Hens can perch, dustbathe, scratch and forage, and lay their eggs in a nest. Battery cages are **not** allowed under the RSPCA Approved Farming Scheme.”*

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The **Australian Egg Corporation Limited (AECL)** has established Egg Corp Assured (ECA), a national egg quality assurance program designed to help commercial egg producers develop an approved quality assurance program for their business and be recognised for doing so.

The ECA quality assurance program addresses issues including food safety, quarantine and biosecurity, hen health and welfare, egg labelling and environmental sustainability. A farm accredited under ECA must be audited by an ECA accredited third party auditor.

Under the program is a Farm Standard – Egg Producer Requirements that requires caged sheds construction to be consistent with the Model Code of Practice for the Welfare of Animals – Domestic Poultry 4th edition.

REVIEW OF INTERNATIONAL POLICIES AND POSITIONS

This section is included to provide a brief international context, while acknowledging that Australia's poultry production systems may vary from production systems, poultry breeds and climatic conditions in other countries. Comparable poultry industries operate in the United States of America and Canada.

New Zealand's Animal Welfare (Layer Hens) Code of Welfare 2012 in effect states that conventional cages will be phased out by the end of 2022 with no new conventional cages allowed as these cages do not allow expression of the described normal behaviours;

- a) Hens must have the opportunity to express a range of normal behaviours. These include, but are not limited to nesting, perching, scratching, ground pecking, and dustbathing.
- b) Any cage installed prior to 31 December 1999 must be replaced with a housing system that meets the requirements of Minimum Standard 12(a) by 31 December 2016.
- c) Any cage installed prior to 31 December 2001 must be replaced with a housing system that meets the requirements of Minimum Standard 12(a) by 31 December 2018.
- d) Any cage installed on or prior to 31 December 2003 must be replaced with a housing system that meets the requirements of Minimum Standard 12(a) by 31 December 2020.
- e) Any cage installed between 1 January 2004 and the date of issue of this code must be replaced with a housing system that meets minimum standard 12(a) by 31 December 2022.
- f) Any housing systems installed after the date of issue of this code must meet the requirements of Minimum Standard 12(a).

Cages

1. must be a minimum of 500 cm² per hen for cages built prior to 1 January 2005.
2. must be a minimum of 550 cm² per hen for cages built from 1 January 2005.
3. must be a minimum of 550 cm² per hen for all cages from 1 January 2014.

Colony cages

1. must be a minimum of 750 cm² per hen or 13 hens per m².

Egg Farmers of **Canada** (EFC) announced, on behalf of the more than 1,000 Canadian egg farms, the commencement of a coordinated, systematic, market-oriented transition from conventional egg production toward other methods of production for supplying eggs. This collective approach will take hen welfare, human health, other resource implications, environmental impact and food production sustainability all into account.

The draft Canadian Recommended code of practice for the care and handling of pullets, layers and spent fowl Poultry - Layers (2016) proposes the phasing out of conventional cages for laying hens but states that during the transition period:

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Transitional Space Allowance Requirements - Effective January 1, 2017

For cages with furnishings installed prior to July 1, 2016, each hen must be provided with a minimum space allowance of 580.6 cm² (90.0 sq in).

Effective January 1, 2020

For Conventional Cages installed prior to July 1, 2016, each bird must be provided with a minimum space allowance of 432.0 cm² (67.0 sq in) for white birds and 484.0 cm² (75.0 sq in) for brown birds.

Final Space Allowance Requirements - Effective for all holdings installed, newly built or rebuilt or brought into use for the first time after January 1, 2017

A minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level.

Enriched Colony Cages¹, each hen must be provided with a minimum of 750.0 cm² (116.25 sq in) of total space, including nests, of which 600.0 cm² (93.0 sq in) does not include nest boxes.

The **European Union (EU)** establishes minimum standards for the welfare of laying hens kept in various systems of rearing in order to protect the hens and prevent distortions of competition between producers in different Member States. Council Directive 1999/74/EC of 19 July 1999 laying down minimum standards for the protection of laying hens came into full force on 1st January 2012. Its key requirement is a ban on the use of conventional cages for laying hens, although enriched cages, increasing the space and facilities for hens, will be allowed.

From 1 January 2002, all enriched² cages must comply at least with the following requirements, each laying hen must have:

- at least 750 cm² of cage;
- a nest;
- litter such that pecking and scratching are possible;
- appropriate perches of at least 15 cm;
- a feed trough that may be used without restriction must be provided. Its length must be at least 12 cm multiplied by the number of hens in the cage;
- each cage must have an appropriate drinking system;
- there must be a minimum aisle width of 90 cm between tiers of cages and a space of at least 35 cm must be allowed between the floor of the building and the bottom tier of cages;
- cages must be fitted with suitable claw-shortening devices.

¹ 'Enriched colony cages' in Canada are the equivalent of 'furnished cages' in Australia

² 'Enriched cages' in the EU are the equivalent of 'furnished cages' in Australia.

2. CAGE FEATURES

RATIONALE

A review by Widowski et al. (2016b) found that the behavioural repertoire of hens in conventional cages is more compromised than hens in non-cage housing due to the lack of suitable sites or resources for activities. Furthermore, hens are highly motivated and prefer to access a nest when one is provided (the “affective state” view). However, they found little physiological evidence to indicate that hen welfare is impaired, based on biological disruption such as a stress response, when resources are not provided (the “biological functioning” view). A recent project (Engel, 2016) showed that hens did not show detrimental effects of not being provided a nest box (based on measures such as corticosterone concentration and behaviour). However, hens that had experience of a nest box chose a nest box over feed prior to oviposition. Altogether, the literature supports the view that not providing a nest box does not result in biological dysfunction, but that provision of a nest appears to provide experienced hens with positive experiences based on their motivation to access them prior to oviposition.

RECOMMENDATIONS

There are no standards proposed for cage furnishings.

ANIMAL HEALTH AND WELFARE CONSIDERATIONS

Furnished cages refer to cages that include some or all of a nest(s), perch(es), litter and claw shortening device(s). There is evidence that furnished cages can offer more behavioural opportunities than conventional cages and result in better health than non-cage systems (Tauson, 2005).

Perches

When a perch is present, it is well used by the hens, particularly to roost at night. Perches have been shown to improve bone strength (Barnett et al., 2009). However, their position, size and shape are crucial to optimize use and avoid landing failures, which can cause broken bones and keel bone deviation, and to minimize cracked eggs. Perching skills are partly developed at a young age (Appleby and Duncan, 1989), highlighting the importance of rearing conditions. Birds reared on the floor and then transferred to cage systems suffer from an increased incidence of osteoporosis (Lay et al., 2011).

Nests

Based on evidence of a strong motivation to lay in a nest box prior to oviposition, differences in pre-laying behaviours in the absence of a nest, and increased vocalizations when access to a nest is blocked, it has been concluded that there is convincing evidence of the importance of a suitable nest site and that welfare is reduced when a 'suitable' nest box is not available (Widowski et al., 2016b.). Nevertheless, the lack of a nest box or the sudden denial of access to a nest box does not result in detrimental biological disruption based on the physiological stress response (Cronin et al., 2012).

Litter/dust-bathing substrate

Hens appear moderately motivated to dust bathe, and sham dust bathing on wire does not fully substitute for dust bathing on a suitable substrate. However, studies investigating the motivation to dust bath provide variable and inconsistent results, and highlight that dust bathing behaviour relies on a complex interaction of internal and environmental factors (Olsson and Keeling, 2005). There is no clear evidence that hens experience frustration or some negative affective state from being deprived of dust bathing in substrate (Widowski et al., 2016).

In a comparison of types of housing, Lay et al. (2011) made the point that each system of housing provides its own challenges to the birds. Increasing the complexity of the environment also increases the potential for injury e.g. moving from conventional caging to larger furnished cages may decrease the tendency for osteoporosis, but may expose the hens to an increased incidence of fractures. They make the point that selective breeding for such traits as improved bone strength and decreased feather pecking may also be important in improving bird welfare.

The design of furnished cages seems crucial to truly benefit hen welfare (Barnett et al., 2009), however other factors such as management on farm also impact on the stress parameters of the hens, given the results of the research by Downing (2012) which showed that there were no differences in mean corticosterone when eggs were grouped into production systems (conventional cages, barn systems and free range). Within each production system, there was a large variation.

The Canadian Poultry (Layer) Code of Practice Scientific Committee (Widowski et al., 2013) concluded that, based on scientific evidence, "Cages furnished with nest areas, perches and scratch mats generally maintain health and hygiene benefits of conventional cages while supporting the expression of some of the hens' motivated behaviour patterns".

REVIEW OF NATIONAL POLICIES AND POSITIONS

The current Australian **Model Code of Practice for the Welfare of Animals – Domestic Poultry 4th** edition (2002) generally provides the basis for the proposed standards but this code does **not** reference furnished or colony cages. Appendix 1 covers age stocking density.

REVIEW OF INTERNATIONAL POLICIES AND POSITIONS

This section is included to provide a brief international context, while acknowledging that Australia's poultry production systems may vary from production systems, poultry breeds and climatic conditions in other countries. Comparable poultry industries operate in the United States of America and Canada.

New Zealand's Animal Welfare (Layer Hens) Code of Welfare 2012 in effect states that for furnished cages:

- (i) A secluded nest area must be provided and the floor of the nest area must be covered with a suitable substrate that prevents direct contact of hens with the wire mesh floor.
- (ii) Floor slope must not exceed 8 degrees which supports the forward facing claws.
- (iii) A colony cage height must be at least 45 cm other than in the nest area.
- (iv) Perches must be provided and designed to allow the hen to grip without risk of trapping its claws and must provide at least 15 cm of space per hen to allow all birds to perch at the same time.
- (v) A scratching area must be provided.
- (vi) Suitable claw shortening devices must be fitted.

The **draft Canadian Recommended code of practice for the care and handling of pullets, layers and spent fowl Poultry - Layers (2016)** foreshadows the following requirements:

- All housing systems must support nesting, perching, and foraging (pecking and scratching) behaviour.

- If any hens have not been transitioned from conventional cages by July 1, 2031, each of those hens still kept in conventional cages must be provided with a minimum space allowance in those systems of 580.6 cm² (90.0 sq in) effective July 1, 2031.
- All hens must be housed in enriched housing systems that meet this Code's requirements by July 1, 2036.

The **European Union (EU)** establishes minimum standards for the welfare of laying hens kept in various systems of rearing in order to protect the hens and prevent distortions of competition between producers in different Member States. Council Directive 1999/74/EC of 19 July 1999 laying down minimum standards for the protection of laying hens came into full force on 1st January 2012. Its key requirement is a ban on the use of conventional cages for laying hens, although enriched cages, increasing the space and facilities for hens, will be allowed. It is not known how effective the ban has been.

From 1 January 2002, all enriched cages must comply at least with the following requirements, each laying hen must have:

- at least 750 cm² of cage,
- a nest,
- litter such that pecking and scratching are possible,
- appropriate perches of at least 15 cm;
- a feed trough that may be used without restriction must be provided. Its length must be at least 12 cm multiplied by the number of hens in the cage;
- each cage must have an appropriate drinking system;
- there must be a minimum aisle width of 90 cm between tiers of cages and a space of at least 35 cm must be allowed between the floor of the building and the bottom tier of cages;
- cages must be fitted with suitable claw-shortening devices.

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