

WELFARE OF LAYING HENS ON FARM

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PAFF meeting 25 April

WHO IS WHO

The European Commission requested EFSA to give an independent view on the protection of domestic fowl (species *Gallus gallus*) related to:

the production of **eggs** including the different phases of the production cycle:



Laying hen breeders



Chicks and pullets before they become laying hens



Laying hens during the production of eggs



GENERAL TERMS OF REFERENCE (TOR)

ToR 1

Describe, based on existing literature and reports, the current **husbandry systems** and practices of keeping them;

ToR 2

Describe the relevant **welfare consequences**. Relevance will not need to be based on a comprehensive risk assessment, but on EFSA's expert opinion regarding the severity, duration and occurrence of each welfare consequence;

ToR 3

Define **qualitative or quantitative measures** to assess the welfare consequences (**animal-based measures -ABMs**);

ToR 4

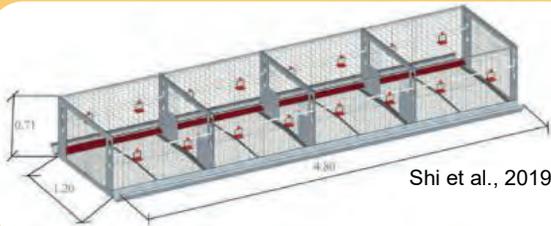
Identify the **hazards** leading to these welfare consequences;

ToR 5

Provide **recommendations** to prevent, mitigate or correct the welfare consequences.

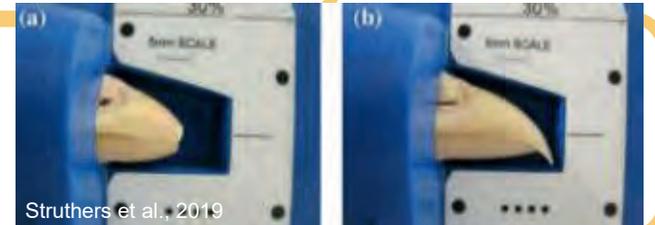


SPECIFIC TERMS OF REFERENCE



Specific ToR 1. The welfare of hens in cage system compared to alternative systems (organic, free range and barn)

Specific ToR 2. Beak trimming and risks associated with rearing of animals non beak trimmed



Specific ToR 3. ABMs collected in slaughterhouses to monitor the level of welfare on laying hen farms

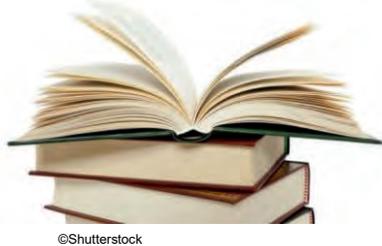
The welfare of male chicks of the layer breed



EFSA to propose

- Detailed, qualitative and quantitative ABMs
- and preventive and corrective measures

DATA AND METHODOLOGY



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Literature review

Questionnaire to the European Forum of Farm Animal Breeders (EFFAB)



Methodologies for space allowance and stocking densities

Expert Knowledge Elicitation (EKE)

Behavioural space model



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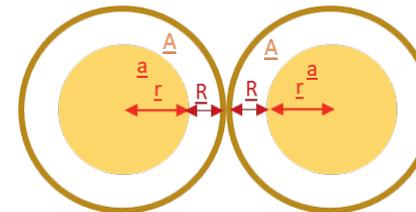


Figure 1. The space occupied by two laying hens in the model

Uncertainty analysis

Quantitative assessment	Certainty range		
	> 50- 100%	66-100%	90-100%
Qualitative translation	More likely than not	From likely to almost certain	From very likely to almost certain



RESULTS: MAIN HOUSING SYSTEMS DESCRIPTION (TOR 1)

Housing systems for three animal categories: **laying hens, chicks/pullets, breeders**

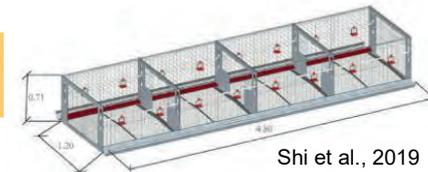
Floor systems with maximum one tier



Floor systems with multi-tier



Collective cages



Individual cages



Systems with exposure to outdoor conditions

Systems with access to covered veranda



Systems with outdoor range



Mobile housing



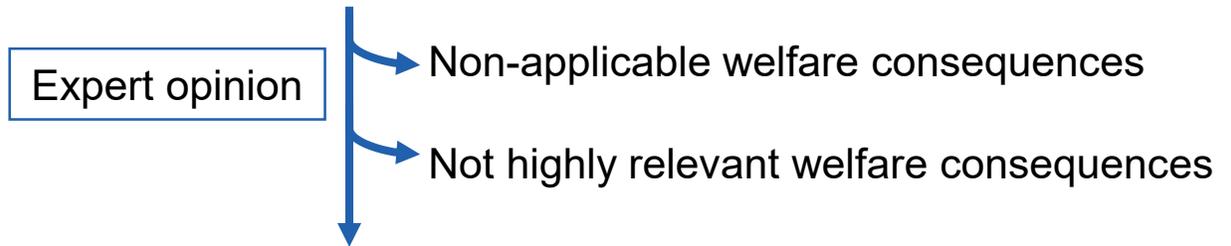
See Section 3.2 of the Scientific opinion for more details



RESULTS: WELFARE CONSEQUENCES (TOR 2)

Welfare consequences
Bone lesions (incl. fractures and dislocations)
Group stress
Inability to avoid unwanted sexual behaviour
Inability to perform exploratory or foraging behaviour
Inability to perform comfort behaviour
Isolation stress
Predation stress
Restriction of movement
Resting problems
Skin disorders (other than soft tissue lesions and integument damage)
Soft tissue lesions and integument damage

33 welfare consequences



11 welfare consequences

were identified as **highly relevant** for laying hens, pullets or layer breeders.

- ABMs (e.g., 'Locomotority behaviours')
- Hazards (e.g., insufficient space allowance per bird)
- Preventive measures (e.g., avoid cage systems)



RESULTS: HIGHLY RELEVANT WELFARE CONSEQUENCES PER HOUSING SYSTEM (TOR 2)

	Laying hens				Pullets					Breeder s				
	Furnish ed cage	Floor system with single-tier	Floor system with multi-tier	Mobile housing	Collecti ve cage	Floor system without elevate d structur e	Floor system with maxim um one tier	Floor system with multi-tier	Mobile housing	Individ ual cage	Collecti ve cage	Floor system with si ngle-tier	Floor system with single tier slatted floor	Floor system with multi-tier
Bone lesions (keel bone fracture)	X	X	X	X							X	X		X
Group stress	X	X	X		X	X	X	X			X	X	X	X
Inability to avoid unwanted sexual behaviour											X	X	X	X
Inability to perform comfort behaviour	X				X					X	X			
Inability to perform exploratory or foraging behaviour	X				X					X	X			
Isolation stress										X				
Predation stress				X					X					
Resting problems					X	X					X	X	X	
Restriction of movement	X				X					X	X			
Skin disorders (other than soft tissue lesions and integument damage)	X	X	X	X										
Soft tissue lesions and integument damage	X	X	X	X							X	X	X	X



SPECIFIC SCENARIO 1: COMPARISON CAGE VS NON-CAGE SYSTEMS IN LAYING HENS

Cage systems



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VS.



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Non-cage systems

With covered veranda or outdoor range area

More highly relevant welfare consequences in cage systems:

- inability to perform comfort behaviour
- inability to perform exploratory or foraging behaviour
- restriction of movement

Facilitate the performance of some behavioural needs

- comfort behaviour
- exploratory and foraging behaviour

Recommendations

- ✓ House all birds in **non-cage systems**
- ✓ Provide a **covered veranda for all birds**



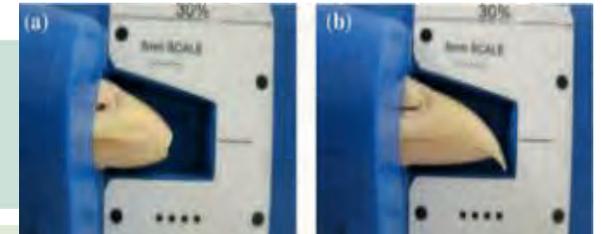
SPECIFIC SCENARIO 2: REARING NON-BEAK TRIMMED BIRDS

Injurious pecking leads to

- Soft tissue lesions and integument damage
- Group stress

Beak trimming leads to

- Soft tissue lesions and integument damage



Struthers et al., 2019

Risks associated if no beak trimming

- Non-beak trimmed birds worsen the situation of injurious pecking if present
- Injurious pecking occurs at a similar level in all types of housing systems, with great variation in prevalence between flocks.

Main preventive measures

- Cage-free systems with elevated structures
- Providing substrate, pecking blocks and enrichment
- Genetic strategies



SPECIFIC SCENARIO 3: ABMS AT SLAUGHTER

11 ABMs identified by EFSA network

Criterion 1: Technology readiness?

Criterion 3: Importance according to the National Contact Points Network?

Criterion 2: Relevance for welfare?

Criterion 4: Already measured at slaughter?

5 ABMs selected



Total mortality on farm



Plumage damage



Wounds

Broilers
©Anja Riber



Keel bone fracture



Carcass condemnation

Broilers
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WELFARE OF MALE CHICKS OF THE LAYER BREED DURING REARING



© Sonja Hillemacher

Behaviours

- More active than broiler chickens and eager to sit on elevated structures
- More aggressive than their sisters from 10 weeks on

Conclusions

- Behaviour and requirements comparable to pullets
- Provision of elevated structures especially important to escape from aggressive encounters

Recommendation

- More research needed about current conditions of rearing of these birds and needs of male chicks



MINIMUM ENCLOSURE CHARACTERISTICS

- Group size
- Min size of the area
- **Max stocking density**
- Elevated structures
- Enrichment/ foraging opportunities
- Nests
- Feeders and drinkers
- Noise
- Light
- Air quality

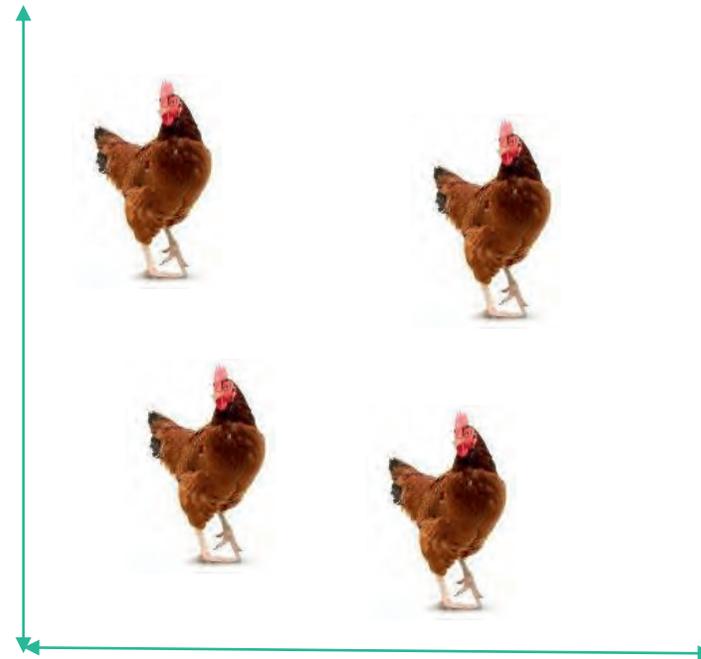
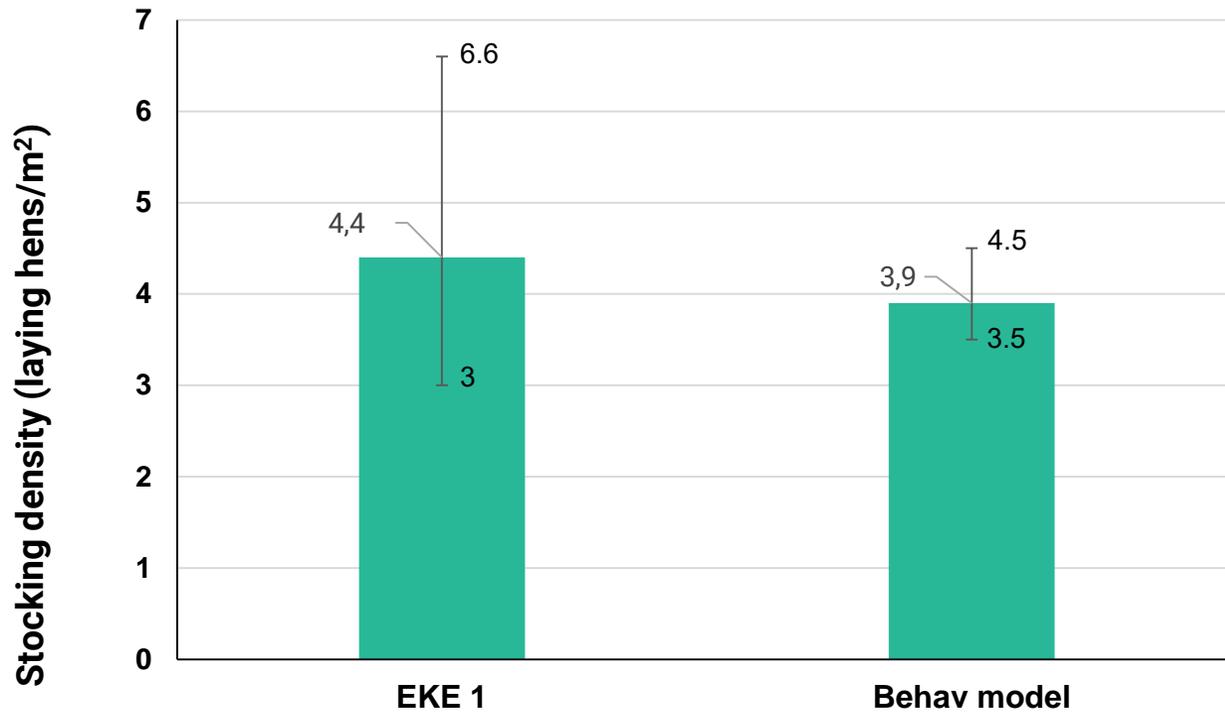
- Minimum characteristics for
 - Covered veranda
 - Outdoor range



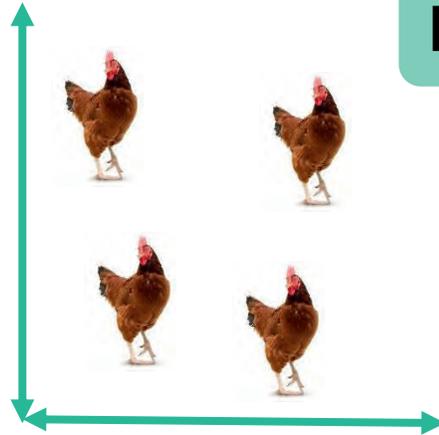
MINIMUM ENCLOSURE CHARACTERISTICS: MAXIMUM DENSITY

Max stocking density

- EKE results
- Model results



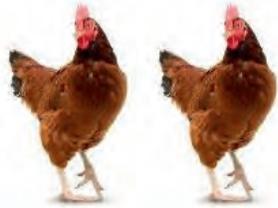
MINIMUM ENCLOSURE CHARACTERISTICS: ENVIRONMENT



Max stocking density

4 laying hens or layer breeder/m²

Minimum group size



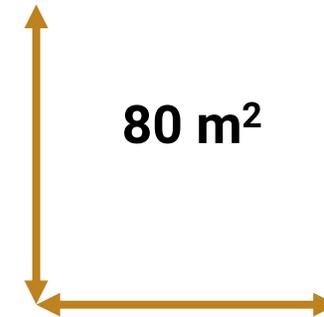
2 birds

Minimum area

For group <30 birds



For group >30 birds



MINIMUM ENCLOSURE CHARACTERISTICS: EQUIPMENT

Elevated platforms and perches

Fulfil the behavioural need for night roosting

Elevated platforms available from 3 weeks of age

Should be non-slippery

Ensure accessibility with ramps angle below 40 °

Minimum 18 cm/hen or breeder and 14 cm/pullet of perches

Diameter between 3 and 6 cm



MINIMUM ENCLOSURE CHARACTERISTICS: EQUIPMENT

Litter

Enrichment and foraging material

Reduce the welfare consequences inability to perform comfort, exploration and foraging behaviours and others



Should **always** be available



At least **1/3** of the useable area

Dry and friable litter

Enrichment additional to the litter **for dustbathing**

Edible enrichment materials

MINIMUM ENCLOSURE CHARACTERISTICS: EQUIPMENT

Covered veranda

Facilitate the performance of some behavioural needs
(e.g., comfort behaviour, exploratory and foraging behaviour)

Give access to different climatic and light conditions which **provide new opportunities** for foraging and exploring

Appropriately dimensioned pop-holes (1m linear for 1000 birds, at maximum height of 25 cm)



At least 20% of the usable area

Outdoor range



At least 50% covered by natural vegetation



20



MAIN RECOMMENDATIONS



- ✓ House all birds in **non-cage systems**



- ✓ House flocks with **easily accessible, elevated platforms and/or perches.**



- ✓ Provide **dry and friable litter, available at all times**, supplemented by other enrichments



- ✓ Provide a **covered veranda for all birds.**



- ✓ Implement all **preventive measures against injurious pecking** to facilitate a phasing out of beak trimming.



MAIN RECOMMENDATIONS



REDUCE MALE AGRESSION

- ✓ In layer breeders: reduce **male aggression** to females e.g., by **reducing proportion of males included in flocks** (below 1:10)



PROTOCOL FOR GENETIC SELECTION

- ✓ Implement **protocols to define welfare trait information**



DARK BROODER

- ✓ Rear pullets with **dark brooders**



HARMONISED ASSESSMENT METHODS

- ✓ Implement harmonised **assessment methods and scoring systems for monitoring** welfare level across farms in Europe

ACKNOWLEDGEMENT LAYING HENS AND BROILERS

- **EFSA AHAW Panel**

- Søren Saxmose Nielsen, Julio Alvarez, Dominique Joseph Bicout, Paolo Calistri, Elisabetta Canali, Julian Ashley Drewe, Bruno Garin-Bastuji, Jose Luis Gonzales Rojas, Christian Gortázar Schmidt, Mette Herskin, Virginie Michel, Miguel Ángel Miranda Chueca, Barbara Padalino, Paolo Pasquali, Helen Clare Roberts, Hans Spoolder, Karl Stahl, Antonio Velarde, Arvo Viltrop, Christoph Winckler

- **Working group welfare of Laying hens on farm**

- Inmaculada Estevez, Maryse Guinebretiere, Bas Rodenburg, Lars Schrader, Inga Tiemann, Thea Van Niekerk, Antonio Velarde, Virginie Michel

- **Working group welfare of Broiler welfare on farm**

- Inga Tiemann, Ingrid de Jong, Sabine Gebhardt-Henrich, Linda Keeling, Anja Riber, Antonio Velarde, Virginie Michel

- **Hearing experts welfare of laying hens on farm**

- Stephanie Buijs, Christine Nicol

- **EKE experts**

- Monique Bestman, Ute Knierim, Karen Laing, Hans-Hermann Thulke

- **EFSA staff**

- Michele Ardizzone, Sean Ashe, Michaela Hempen, Raquel Garcia Matas, Olaf Mosbach-Schulz, Cristina Rojo Gimeno, Yves Van der Stede, Marika Vitali, Mariana Geffroy, Eléa Bailly-Caumette and Kateryna Chuzhakina

