

## The assessment of foot lesions at slaughter in laying hens



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### What are foot lesions and what do they indicate?

In this factsheet, foot lesions include footpad dermatitis, hyperkeratosis, bumble foot (swollen foot with pad lesion– Figure 1), and toe damage. In laying hen farms, birds' feet are exposed to prolonged contact with soil, litter, housing equipment such as wire floors or bad designed perches, pecking by conspecific and may develop lesions. These foot lesions can cause discomfort and/or pain to the animals and may lead to mortality. Foot lesions may be linked to several factors (Figure 2). According to scientific studies, foot lesions are seen more often in free-range systems than in cages (bumble foot and footpad lesions; Dikmen et al. 2016), or more frequent in aviary systems in comparison with any other rearing system (footpad lesions; Grafl et al. 2017), or less observed when laying hens have access to litter (footpad dermatitis, Rojs et al. 2020), or more frequent in indoor systems than in free-range (footpad lesions; Grafl et al. 2017) or organic systems (footpad lesions; Riber and Hinrichsen, 2016). However, in another study, no difference has been observed between housing systems (footpad dermatitis, Wang et al. 2020). Nevertheless, more lesions could be observed during the winter season in relation with litter and soil conditions (Grafl et al. 2017). Thus, the housing system seems to play an incompletely known role in foot lesions occurrence because each farm characteristics (litter quality, poor equipment design...) would have more impacts than the housing system per se. For example, toe damages could be caused by pecking but also by poor equipment design (sharp edges, trapping items...). Regarding the genotype, there is no consensus, it may (Sözücü et al. 2021) or may not (Grafl et al. 2017) play a role in the frequency and severity of lesions.

Figure 1. Example of bumble foot (©IRTA)

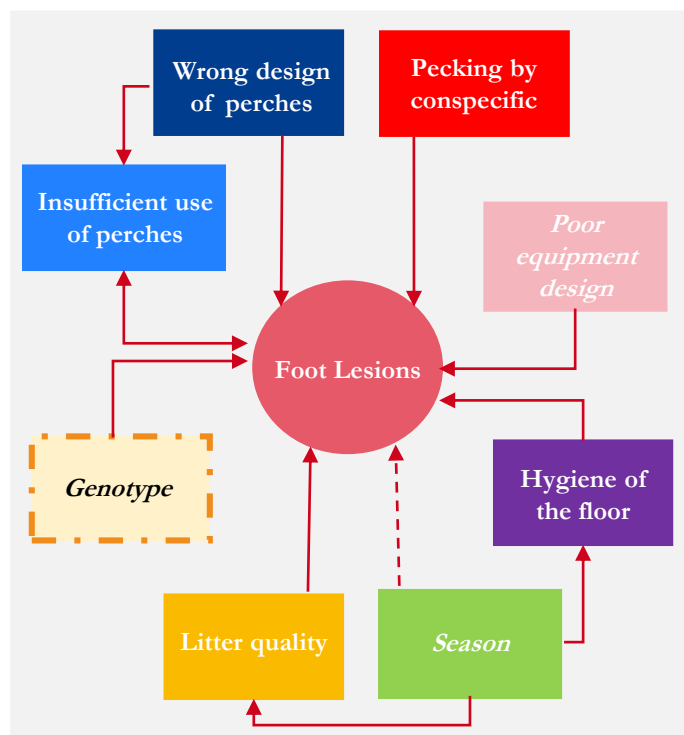


Figure 2. Factors influencing foot lesions in laying hens  
Dotted arrow indicates indirect impact. Dotted box indicates uncertain effect.



### Legal requirements

**Council directive 1999/74/EC** on minimum standards for the protection of laying hens states:

- “adequate perches, without sharp edges and providing at least 15 cm per hen.” (Chapter 1, Article 4, point 1d)
- “The floors of installations must be constructed so as to support adequately each of the forward-facing claws of each foot.” (Chapter 1, Article 4, point 2)
- “cages must be fitted with suitable claw-shortening devices.” (Chapter 3, Article 6, point 5)

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## Method

Although well used during on farm assessment, foot lesions could also be observed after slaughter to assess laying hens' welfare on-farm and the quality of their housing conditions. The following scoring method allows the assessment of foot lesions such as footpad dermatitis and bumble foot. It has been based on and adapted from the protocols of Grafl et al. (2017) and from the Welfare Quality Protocol (2019). Nevertheless, it has not yet been validated in slaughterhouse conditions since for now it is mainly used in observations on living animals on-farm.

Both feet of 100 laying hens randomly observed on the slaughter line immediately after slaughter (after scalding and before the feet are cut off) are scored:

**Score 0:** No lesion, feet intact, no or minimal epithelium proliferation, no bumble foot.

**Score 1:** Moderate lesions of the feet, epithelium proliferation, with no or moderate swelling.

**Score 2:** Severe lesions, necrosis, and/or bumble foot (swollen foot dorsally visible).



Score 0

©Grafl et al. 2017



Score 1

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Score 2

©Grafl et al. 2017

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On the same sample, damaged and missing toes can be assessed as follow:

**Score 0:** No or minimal evidence of damaged toe

**Score 1:** Visibly damaged toe

**Score 2:** Missing toe



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Score 0

Score 1

Score 2

Although a high prevalence of foot lesions indicates welfare issues, that can be related to several factors (see figure 2), the absence of lesions is not always evidence of a high welfare level. This indicator is not self-sufficient and, in case of a high prevalence of lesions, a deeper welfare assessment is required.

## References

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