



## Foot Pad dermatitis (FPD) in Broiler Chicken



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### Introduction

**Footpad dermatitis** (FPD) is a contact dermatitis that can lead to ulcerative lesions on the plantar surface of footpads in poultry. It represents one of the main concerns of the poultry sector, because of its impact on both production and animal welfare.

### FPD as an Iceberg Indicator

FPD scored at slaughter is considered the most reliable indicator of broiler chicken welfare on farm since footpad health correlates directly to **litter quality**, in particular **wetness**. **Scoring systems have been developed and are widely used for this purpose.**

### Health and Welfare consequences

Birds with severe FPD lesions:

- Experience **pain**
- Show **impaired locomotory behaviour**
- May show **reduced feed intake** and **weight loss** due to difficulties to reach feeders and drinkers
- Can be more susceptible to **infections** with *Staphylococcus aureus* and other microorganisms

### How to prevent FPD?

- It is preferable to **prevent** the occurrence of FPD, rather than cure it.
- The **main environmental** factor involved in FPD development is **wet litter**.
- The best way to avoid FPD is therefore to **maintain good litter quality, keeping it dry and friable.**
- Litter quality assessment** (wetness and friability) should be used to monitor the evolution of the litter and prevent it becoming wet which would cause the onset of FPD on farm.
- Good ventilation** should be ensured to avoid humidity that can lead to wet and caked litter.
- Litter quality **should be assessed daily** and the reasons for any changes in litter quality should be established and action taken to correct this where necessary (tilling and/or addition of new litter).
- Optimizing environment, nutrition and enteric health** will reduce the occurrence of wet litter so that litter quality is maintained throughout the life-time of the flock.
- Reducing **stocking density** and using **elevated platforms**, to avoid birds being constantly in contact with litter, can also help reducing the incidence of FPD.

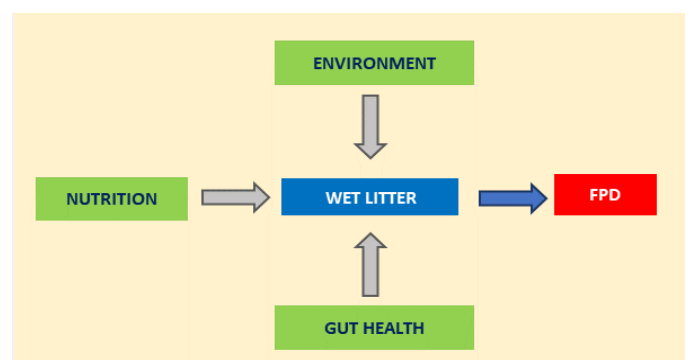


Nipple leaking can compromise litter quality



Wet litter

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### FPD scoring systems

- A number of scoring systems have been developed to ~~try and~~ assess the incidence and severity of FPD within individual broiler flocks. They are based on the percentage of affected feet (sometimes including digital lesions) (Martrenchar et al., 2002), lesion size (Dawkins et al., 2004), lesion severity (Ekstrand et al., 1998) or a combination of lesion size and severity (Allain et al., 2009; Martland, 1985). However, at present, no common standardised FPD scoring method for broiler chicken has been adopted throughout Europe.
- The scoring systems most widely used in Europe are based on a 3-point scale system consisting in an adaptation of the Swedish scoring system (Lotta Berg 1998). A 5-point scale scoring system was developed in a French study (V. Michel et al. 2012), where the severity of the macroscopic lesions was histologically validated, supporting the reliability of the scoring in terms of animal welfare.
- Footpads **can be scored from 0 to 2 (Lotta Berg 1998, adapted):**
  - 0: No lesion** or very small superficial lesions or healed skin with slight discoloration on limited area of the footpad, enlargement of scales, erythema, mild hyperkeratosis.
  - 1: Mild lesion.** Superficial lesion characterized by hypertrophic and hyperkeratotic scales covered by a yellowish to brownish exudate (poorly adherent crust) with substantial discoloration of the footpad.
  - 2: Severe lesion.** Depressed lesion, loss of substance, crater (ulceration), with dark (brown or black) thick adherent crust, signs of haemorrhages or severely swollen footpad



Score 0



Score 1



Score 2

V. Michel et al. 2012

### How to calculate the Score

- At the processing plant, **200 feet per broiler flock**, severed from the carcasses, are randomly collected and assessed using the above scoring system. An **overall score** is then assigned to the flock ranging from 0 (all feet score 0) to 200 (all feet score 2). Feet can also be assessed on the line although the high line speed makes it often difficult. The Welfare quality protocol (2009) provides a method for this purpose.
  - In order to calculate the **FPD Score**:
    - Count scores 1 and 2
    - Multiply scores 1 with 0.5 and scores 2 with 2
    - Make a sum of the outcome
    - Multiply this number by 100 and divide by the number of footpads scored
- $$\frac{[(0 \times \text{feet with score 0}) + (0.5 \times \text{feet with score 1}) + (2 \times \text{feet with score 2})]}{\text{Total number of scored feet}} \times 100$$
- Action shall be taken based on the result according to the agreed threshold levels: For example in Sweden and Denmark the threshold value for FPD has been set at 80.
  - The result will depend on the combination of severity of FPD: For example, a score of 80 could be reached by 160 less severe cases (scored 1), 40 severe cases (scored 2) or some other combinations.

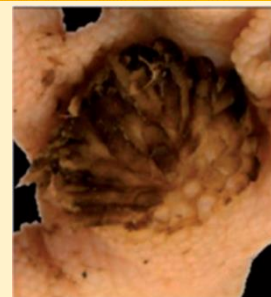
## Foot pad dermatitis (FPD) in Broiler Chicken - Score examples

**Score 0: No lesion or very small superficial lesions, enlargement of scales, erythema, mild hyperkeratosis.**



V. Michel et al. 2012

**Score 1: Superficial lesion characterized by hypertrophic and hyperkeratotic scales covered by a yellowish to brownish exudate (poorly adherent crust)**



V. Michel et al. 2012

**Score 2: Depressed lesion, loss of substance, crater (ulceration), with dark (brown or black) thick adherent crust, signs of haemorrhages or severely swollen footpad**



V. Michel et al. 2012

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