



Poultry Extension Collaborative newsletter

A collaboration between Purdue University, University of Maryland,
North Carolina State University and Virginia Tech

Footpad dermatitis in poultry: a common issue in commercial and backyard flocks

Footpad dermatitis is a common type of contact dermatitis in poultry, which means feet are inflamed and show associated corrosive lesions or ulcers on pads and/or toes. Footpad dermatitis lesions often have a black appearance, because of cell necrosis (cell death). These lesions can be superficial or deep.

These lesions are an animal welfare problem because they are painful depending on the severity of the lesions. They can also affect production outcomes (birds will be less motivated to walk to feed and water) and will result in behavioral restriction in extreme cases.

Once a lesion has developed, the bird is at risk of secondary infection, as the barrier of the skin is compromised. Examples are E-coli or Salmonella infections.



Footpad dermatitis refers to a lesion on the footpad and/or toes, characterized by black, necrotic skin and inflammation. Necrosis is often preceded by hyperkeratosis (thickening of the outer layer of skin).

Scoring footpad lesions using a categorical scale

Severity of footpad dermatitis lesions can be quantified using this scoring system. Regularly assess a representative sample of your flock (all birds in case of a small flock, or 50 birds in case of a large flock) to keep an eye on the progress.



Score 0:
No visible lesion



Score 1:
Superficial
discoloring (<10%
of central footpad)



Score 2:
Superficial
discoloring (>10%
of central footpad)



Score 3:
Deep lesion and
ulceration (<50%
of central footpad
and toes)



Score 4:
Deep lesion and
ulceration (>50%
of central footpad
and toes)

Welfare Quality® Network, 2009

Photos: Leonie Jacobs

Footpad dermatitis occurs frequently



Severe footpad
lesions in a
broiler chicken

Footpad dermatitis is very common in both the poultry industry and in backyard flocks (although numbers for the latter are not available). Some examples of findings in commercial birds:

Broiler chickens: About 50% of commercial (heavy) broiler chickens were found with some degree of footpad dermatitis in southeastern U.S. (Opengart et al 2018). In Europe, a Danish study found 58% of commercial broilers with lesions on their feet (Lund et al 2017).

Laying hens: A study examining nearly 300 cage-free laying hen flocks found on average 40% of hens in each flock affected by footpad dermatitis (Niebuhr et al 2009). An experimental study showed footpad dermatitis to be a common issue in both furnished cages as in cage-free birds, with prevalences ranging between 60 and 93% of the birds having a lesion (Weitzenbürger et al 2006).

Turkeys: As with other poultry, footpad dermatitis can be a common occurrence. Nearly 50% of young turkeys showed lesions on their feet in one study (Bergmann et al 2013), and another reported the lesions in 95% of turkeys from 41 flocks in North Carolina (Da Costa et al 2014).



Healthy footpads of a
broiler chicken

How does footpad dermatitis develop?

The major risk factor for footpad dermatitis is the quality of litter or bedding. The key issues are wet litter and associated chemicals present in the wet litter (for instance ammonia). Litter type and depth also play a role. Other factors, such as body weight, diet, leaky waterers, and ventilation can indirectly impact prevalence and severity of lesions. For instance, poor ventilation can lead to wet bedding material, and prolonged contact with wet bedding can induce lesion development.



What can you do?

Preventing is better than remedying lesions after they have developed. A key strategy is to manage the litter moisture and associated chemicals. Litter and drinker management play important roles in preventing these issues. Yet, there are some options to heal lesions or reduce the prevalence of footpad dermatitis, which are listed below:

- Consult a veterinarian to treat the lesions appropriately.
- Gently clean and wrap the lesion so that the feet are no longer in direct contact with litter or other bedding materials. Replace the bandage frequently.
- Ensure the environment (bedding, litter) is dry, by replacing the litter or topdressing with an absorbent material, such as pine shavings (Freeman et al, 2020).



Moderate and severe footpad lesions can be painful

What not to do...

There are some videos online that show backyard flock owners performing DIY surgeries on their birds, removing the inflamed lesion. This is inhumane. Although they may not show it, poultry can experience pain, and home surgeries will cause severe pain and distress. Surgeries can be done by a licensed veterinarian, if it is deemed necessary.

Useful references

- (1) Opengart, K. et al. 2018. Incidence, severity, and relationship of broiler footpad lesions and gait scores of market-age broilers raised under commercial conditions in the southeastern United States. *J. Appl. Poult. Res.* 27:424–432 Available at <https://doi.org/10.3382/japr/pfy002>.
- (2) Lund, P.V. et al. Evaluation of the Danish footpad lesion surveillance in conventional and organic broilers: Misclassification of scoring. *Poult. Sci.* 2017, 96, 2018–2028.
- (3) Niebuhr, C. et al. 2009. Foot pad dermatitis in laying hens kept in non-cage systems in Austria. Abstract https://www.cabi.org/Uploads/animal-science/worlds-poultry-science-association/WPSA-italy-2009/6_welfare2009_niebuhr.pdf
- (4) Weitzenbürger, D. et al. "Macroscopic and histopathological alterations of foot pads of laying hens kept in small group housing systems and furnished cages." *British poultry science* 47.5 (2006): 533-543.
- (5) Bergmann, S. et al. 2013. Prevalence and severity of foot pad alterations in German turkey poultlets during the early rearing phase. *Poult. Sci.* 92, 1171-1176.
- (6) Da Costa, M. J. et al. "Footpad dermatitis severity on turkey flocks and correlations with locomotion, litter conditions, and body weight at market age." *Journal of Applied Poultry Research* 23.2 (2014): 268-279.
- (7) Welfare Quality® Network, 2009
http://www.welfarequality.net/media/1019/poultry_protocol.pdf
- (8) Freeman, N. et al. 2020. "Remedying Contact Dermatitis in Broiler Chickens with Novel Flooring Treatments." *Animals* 10.10 (2020): 1761.



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