



Footpad lesions in broiler chickens

Practical tips on how to identify
and prevent footpad lesions



LIVESTOCK RESEARCH
WAGENINGEN UR

How to use this flyer

Footpad lesions in broiler chickens are caused by wet and sticky litter. Wet and sticky litter can be caused by many factors and the strategy to prevent this may vary from farm to farm.

This flyer lists various measures that can be taken to prevent footpad lesions on the broiler farm. This knowledge is based on work performed by Wageningen UR Livestock Research, experiences of broiler farmers and information derived from elsewhere in the world.



Classification of footpad lesions



Class 0

Class 0: no lesion

- No discoloration or small light brown discoloration of the footpad.



Class 1

Class 1: mild lesion

- Footpad is only superficially affected.
- Brown discoloration and hyperkeratosis on the footpad.
- Mild lesions are a risk factor for the development of severe (class 2) lesions.
- If there is a high prevalence of mild lesions in your flock, action should be undertaken. Mild lesions can heal.

Classification of footpad lesions



Class 2

Class 2: Severe lesion

- Dark brown or black discoloration of the footpad, lesion is covered with a crust/scab.
- Erosion of the footpad, accompanied often by subcutaneous inflammation.
- Occasionally swelling of the footpad.
- Severe lesions are usually larger in size than mild lesions, but may also be small!



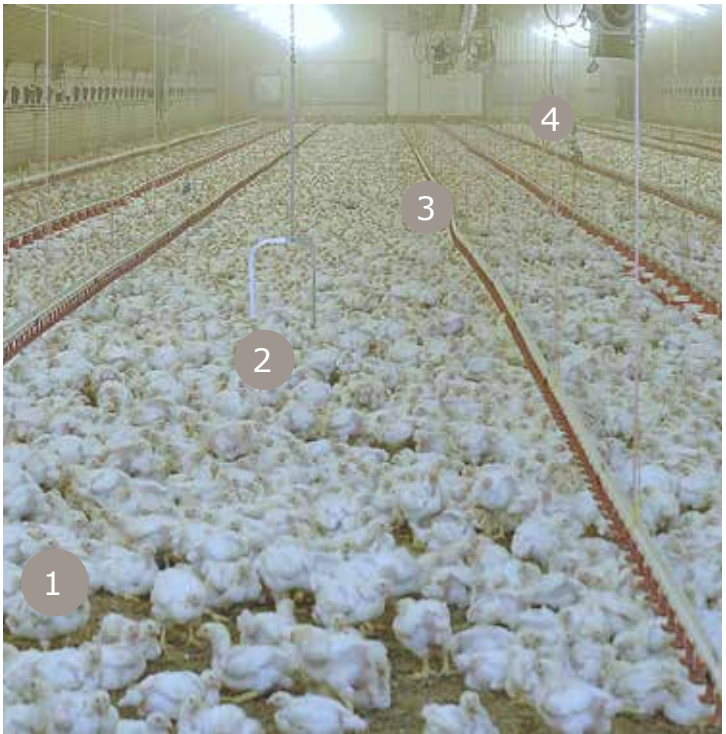
Preparation of the broiler house

- Thoroughly clean and disinfect the house.
- The floor should be completely dry after cleaning and disinfection.
- Check ventilation, air inlets, heating, temperature and humidity sensors, lighting and drinking appliances. If necessary adjust or repair these.
- Floor temperature should be **at least 30°C** in the whole house prior to distribution of the bedding material. Keep the house warm in between successive flocks. If the floor temperature is lower than 30°C, the environmental temperature at flock placement should be one degree Celsius higher for each degree lower than 30°C.
- Clean and disinfect the water pipes and flush the pipes thoroughly one hour before placement of the day-old broilers.



Inspection

- Inspect the footpads of the chickens at least twice a week, starting from day 4-5 of age onwards. Footpad lesions can develop at an early age.
- Inspect a number of broiler chickens at different locations in the house. A **rule of thumb** can be: four locations (see picture), five broiler chickens per location. If more than 10-20% of the footpads show mild lesions, action should be undertaken.
- Inspect chickens displaying a good as well as a poor gait.
- Check footpads of all selected (euthanised) chickens and all those found dead.



Litter management

- **Wet and sticky litter** is the most important risk factor for the development of footpad lesions.
- Check litter quality daily at different locations throughout the house and adapt your management when necessary.
- Check faeces consistency on a daily basis. A litter box can be helpful.
- Make a choice for appropriate bedding material: peat or lignocellulose are preferred to wood shavings and wood shavings are preferred to (chopped) straw.
- If (wheat) straw is used as bedding material, this should be chopped (2-4 cm maximum).



Litter management

- Distribute the bedding material when the whole floor temperature has reached 30°C.
- Use a thin layer of bedding material (0.6-1.0 kg/m²).
Note: when applying a thin layer of bedding preheating of the floor is extremely important. If the desired floor temperature cannot be realised, a thicker layer should be used up to 1,5 kg/m².
- **Prevent wet litter.** Wet spots should be removed from the house.
- Encourage scratching behaviour of the chickens by loosening the bedding with your boots or a hoe or rake.
- Remove the chick paper after three days, also when thin paper is used.
- Loosen caked litter.
- Raise the drinking lines alternately if sufficient lines are present in the house. This to allow the litter below the drinking line to dry.



- Use of closed heating or central heating systems is recommended.
- Ensure that your heating system has sufficient capacity for the house.
- Prevent draughts and heat loss. Ideally heat should be distributed evenly throughout the house. If necessary, additional (circulation) fans should be installed.
- The distribution of the broiler chickens in the house is an useful indicator of house temperature distribution.
- Checking and controlling the floor temperature is easier with floor heating. Use of floor heating prevents foot pad lesions.
- Your (spray) cooling system should function adequately. Prevent water dripping on to the litter.



House climate

- Ventilate from day 1 onwards.
- **Check and control** the relative humidity in the house. Relative humidity should be in between 50-70% (see table). Do not reduce the house temperature too fast, especially in the first week of life of the chickens.

Age (days)	Set temperature at bird height (°C)	Relative humidity (%)
0-1	33	50-60
2-3	32	50-60
7	30	50
14	28	55
21	25	60
28	22	65
35 - slaughter	20	<70

If the floor temperature is below 30°C at broiler placement, environmental temperature should be one degree Celsius higher for each degree below 30°C.



Drinking water

- Water should be of good quality. Check water quality in the pipes on a regular basis.
- During the first few days after placement the water flow in the drinking system is minimal. Therefore it is strongly advised to flush your drinking system daily during the first week of life, in order to supply clean water to the chickens.
- Use of drinking nipples instead of cups reduces the risk of footpad lesions.
- Placement of drip cups under the nipples reduces the risk for water spillage, thus lowering the risk of footpad lesion development.
- Check the drinking systems daily. Replace leaking nipples and defect drip cups immediately.
- The drinking system should be checked at regularly basis. Pressure controllers should function adequately and filters should be clean.
- Replace the drinking system every 5-7 years.
- Sufficient drinkers should be present.



Drinking water

- Clean the drinking system thoroughly in between two production rounds. This is also advised after vaccination/adding vitamins to the water. This reduces the risk of leakage.
- Drinking lines should hang horizontally.
- During the first three days chickens should be able to drink easily. Do not use a too high water pressure in the period up to 21 days of age. Thereafter the pressure can be gradually increased. Low water pressure reduces the risk of spillage. In addition, management of gut health is better when applying low water pressure.
- Adjust the height of the drinkers daily. When the drinkers hang too low, the risk for spillage increases.
- Acidification of water reduces the risk of footpad dermatitis.
- Check the water flow. The recommended water:feed ratio is below **1.75**.
- Check and prevent condensation on the drinking lines and/or water supply line.



Light conditions

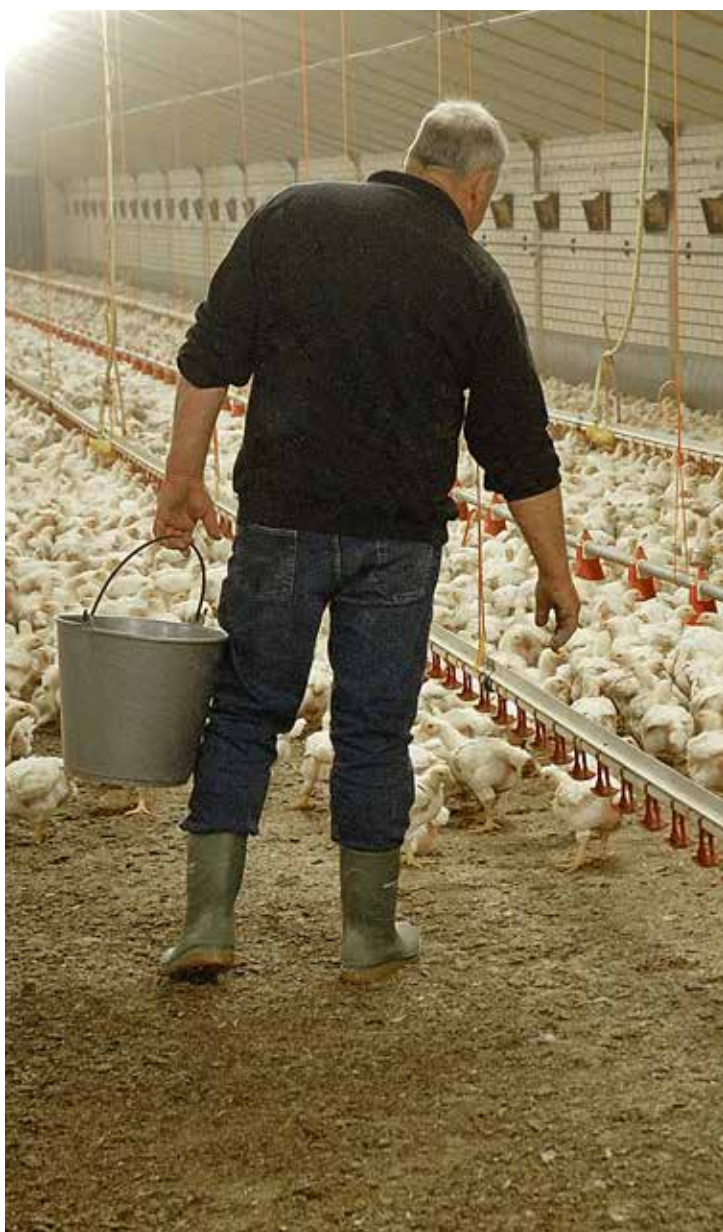
- Light should be distributed evenly throughout the house (prevent development of resting areas – dark spots).
- Sufficient lighting (light bulbs or TL tubes) should be provided.
- Replace broken light bulbs or tubes immediately.
- Higher light intensity stimulates bird activity, which in turn reduces the risk of footpad dermatitis.
- Uninterrupted dark periods should be limited to a maximum of four hours. Broiler chickens should be able to eat sufficiently before the dark period to avoid moist faeces.
- An **intermittent lighting schedule** is strongly recommended to stimulate bird activity (and technical performance) instead of a day/night lighting schedule.
- Vertically hanging fluorescent tubes usually provide a more even light distribution than fluorescent tubes mounted on the ceiling of the house.



- It is recommended to introduce several feeding phases (multi-phase feeding) to prevent footpad dermatitis.
- **Change gradually** from one feeding phase to another.
- Daily adjustment (reduction) of crude protein content (dynamic feeding) using whole wheat in the feed is effective in the reduction of footpad dermatitis.
- When gut problems and moist litter occur, an increase in the amount of whole wheat (or even only wheat for a short period) can help.
- Wheat in the litter will stimulate foraging and loosening of the bedding substrate and lower the risk of footpad dermatitis.
- Lower crude protein content in the ration reduces the risk of footpad dermatitis.
- Mineral contents (K, Ca, Mg, Na) should not be too high to prevent footpad dermatitis. If wet litter occurs check the mineral contents of the diet(s). Any dietary minerals present in excess have to be excreted by the chickens.



- Ensure that the house facilities (ventilation- and heating capacity, number of drinkers and feeders, etc) and your management are adapted to the stocking density. Do NOT place too many birds in the house in relation to the capacity of your housing facilities.
- Hubbard Flex broilers have been shown to provide a lower risk of footpad dermatitis in comparison to Ross 308 or Cobb 500 chickens.
- Thinning out increases the risk of footpad dermatitis.
- A lower stocking density at placement reduces the risk of footpad dermatitis.





The pictures in this flyer were taken during work performed by Wageningen UR Livestock Research and at the farm of Kees Koolen, Bergeijk, The Netherlands.

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