

## Introduction

Litter conditions significantly influence broiler performance (Fairchild *et al.*, 2009). One aspect of good litter management is keeping the litter dry. Increased litter moisture content can cause severe Footpad Dermatitis, can reduce broiler performance and can have a negative effect on other welfare aspects (Gunnink *et al.*, 2014). This study was conducted on a broiler farm, where a drying powder was used to keep the litter dry underneath the drinking water system.

## Objective

The objective of this study was to determine the effect of applying MS DryCare under the drinking water system on the ammonia concentration, litter quality, relative humidity and Footpad Dermatitis in broiler houses.



**Figure 1.** House 1 (left) and house 2 (right) of the experimental group on the broiler farm.

**Table 1.** Details on the two houses on the farm (experimental group).

	House 1	House 2
Size of the house	17,250 ft <sup>2</sup>	17,250 ft <sup>2</sup>
Number of broilers	17,360	18,400
Broiler sex	mixed	female
Amount of MS DryCare	165 lbs	110 lbs
Frequency	Weekly underneath drinking line	Weekly underneath drinking line

## Materials and methods

- 73,280 broiler chickens were divided into 2 groups of 2 replicates.
- Control group (without MS DryCare)
  - House 1: 18,000 male broilers
  - House 2: 19,520 female broilers
- Experimental group (MS DryCare) (for details see Table 1)
- 165 lbs of MS DryCare was applied in house 1 under the drinking lines.
- 110 lbs of MS DryCare was applied in house 2 under the drinking lines.
- Application method: a spreader
- Bedding material: rice husk
- Scoring methods:
  - The litter quality was scored from 1 to 4 (Table 2).
  - Footpad Dermatitis was scored from 0 to 3 in the broiler houses (Table 3). The final percentage of Footpad Dermatitis was determined at the slaughterhouse.
- Relative humidity (%RH) and wind speed (m/s) were recorded.
- The concentration ammonia was measured with a Gasbadge Pro Device.

**Table 2.** Litter quality scoring.

Score 1	Score 2	Score 3	Score 4
			
Dry and loose litter	Some lumps, overall dry litter	Tightly packed dark litter	Wet dark brown lumps of litter

**Table 3.** Footpad Dermatitis scoring.

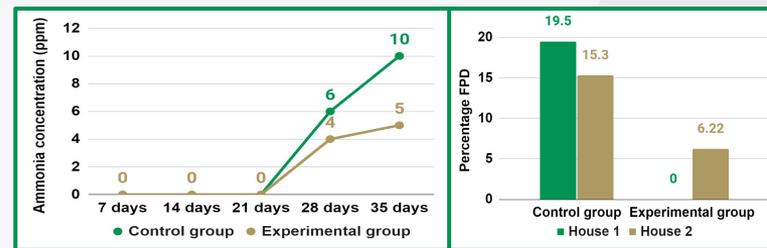
Score 0	Score 1	Score 2	Score 3
			
No dark spots or redness	Red spots or small bands, dark color	Dark red spots	Large dark red spots, redness in toe area

## Results

- For the experimental group, the litter score in house 1 was better than in house 2 at day 28 and 35 (Table 4).
- The average relative humidity was numerically, but not significantly, lower for the experimental group in house 1 than in house 2.
- The ammonia concentration was significantly lower for the experimental group (5 ppm) than for the control group (10 ppm) at day 35 (Figure 2, left).
- The percentage of Footpad Dermatitis was reduced from 19.5% (control group) to 0 (experimental group) in house 1, and from 15.3% (control group) to 6.2% in house 2 (Figure 2, right, Table 3).

**Table 4.** Results for experimental groups; litter score and relative humidity.

Day	Average litter quality score		Average %RH	
	House 1	House 2	House 1	House 2
14	1.8	1.8	73	78
21	1.7	1.7	-	-
28	2.2	2.5	68.7	68.7
35	2.2	3.0	71.6	77.5



**Figure 2.** Concentration of ammonia in the broiler houses (left); Percentage of Footpad Dermatitis (FPD) per house (right).

## Conclusions

- MS DryCare **reduces the concentration of ammonia** in a broiler farm.
- Using 165 lbs of MS DryCare **improves the litter quality** compared to using 110 lbs.
- MS DryCare **reduces Footpad Dermatitis** when applying 110 lbs under the drinking lines of a barn of 17,250 ft<sup>2</sup>.
- MS DryCare **eliminates Footpad Dermatitis** when using 165 lbs under the drinking lines of a barn of 17,250 ft<sup>2</sup>.