



Causal factors of 'wet litter' in chicken-meat production

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Background

More than 90 years ago, Dann (1923) opined that 'wet litter' is a rather troublesome problem for most poultry-men. The problem of wet litter still persists in the poultry industry today, largely due to similar reasons. However, contemporary pressures on the chicken meat industry demand better litter management. Wet litter frequently results in the development of footpad lesions and poor growth performance. Importantly, it is gathering momentum as a welfare issue for both meat chickens and meat chicken breeder flocks.

As part of RIRDC Chicken Meat project PRJ-009184 the multidimensional causal factors of 'wet litter' in chicken meat production were reviewed and fifteen personnel from the chicken meat industry in Australia and England were surveyed to garner current industry opinion as to the causes and potential best practices to prevent wet litter. The respondents included seven practical nutritionists, three veterinarians, three academic nutritionists and two non-professional, experienced poultry-men.

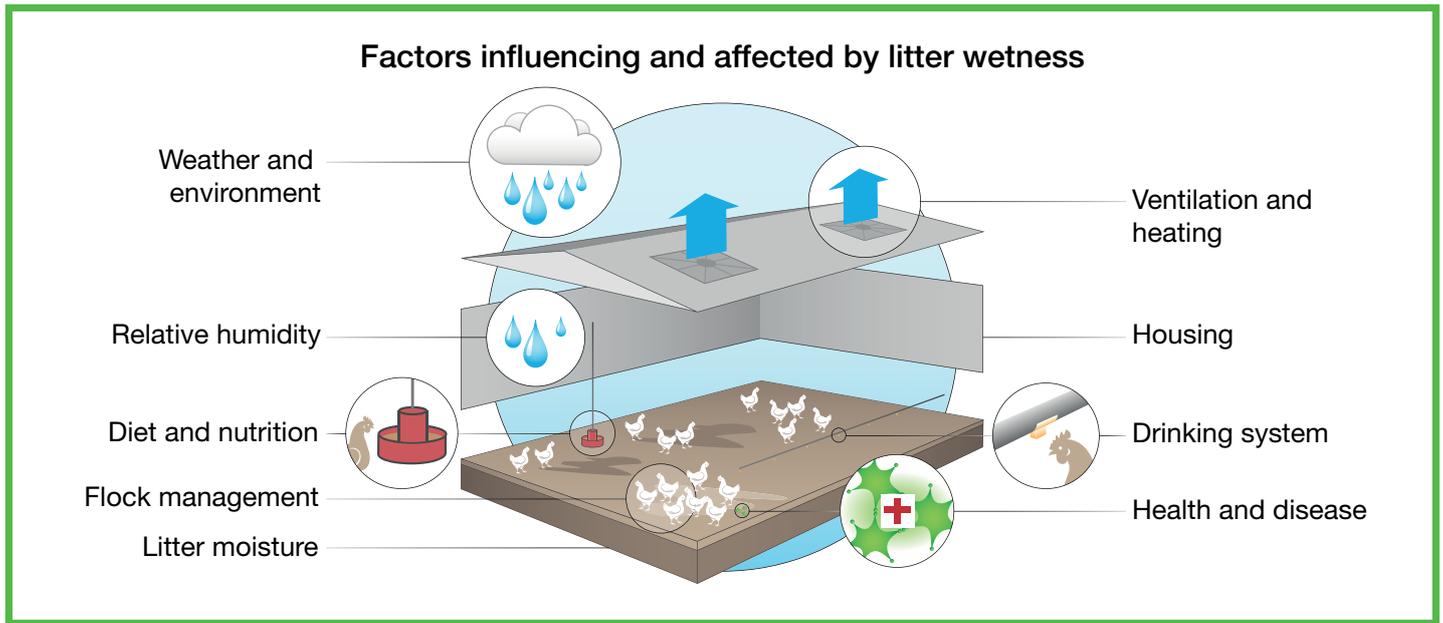


Definition of 'wet litter'

Preventing wet litter is a problem - and so is defining it. Industry personnel all gave different interpretations. However, one survey respondent astutely defined wet litter as "litter that is sufficiently moisture-laden to be detrimental to the health and welfare of the birds by way of causing foot-pad damage". While this definition holds true in a practical sense, a more precise definition of wet litter is when litter moisture exceeds 250 g/kg, its cushioning, insulating and water holding capacity is compromised (Collett, 2012). In essence, acceptable litter is 'dry and friable', which is a nebulous definition. It is important not to confuse the difference between wet litter and dry caked litter. While dry caked litter is not friable and is considered by some to be wet litter, it may not contribute to the issues associated with wet litter.

In a nutshell, wet litter results when rates of water addition (excreta, spillage, condensation, leaks etc.) exceed rates of removal from evaporation (Collett, 2007).





Causes and prevention of 'wet litter'

Sampling

The overall perception of the survey respondents was that wet litter compromised bird performance and was also a welfare issue. The consensus was that the genesis of wet litter primarily stemmed from environmental factors in the broadest sense with lesser and equal importance being placed on nutrition and disease factors. What could be described as 'micro-environmental factors' were identified by respondents as the prime cause of wet litter.

The literature review found the main causal factor of wet litter are indeed micro-environmental factors and chief amongst them is proper management of drinking systems and provision of adequate shed ventilation. Thus there is a greater focus on these environmental factors and less attention paid to issues stemming from health and nutrition in this project summary.

The pivotal implication of the review was found to be that diligent supervision by management and staff of meat chicken grow-out sheds should largely overcome the problem of wet litter. The central point being that maintaining acceptable litter quality is largely dependent on prevention and monitoring.



Top – no lesions, bottom – Foot Pad Dermatitis lesions

Images courtesy of Brian Fairchild and Michael Czarick - The University of Georgia

Micro-environmental causes of wet litter identified in literature ranked in importance.*

Cause identified	Prevention / management
Poor or inadequate ventilation	Managing ventilation to minimise in-shed humidity is highly important. The ideal target for relative humidity is 50-60%, but this is influenced by the external shed humidity and will need to be adjusted through the life of the flock.
Improper management / maintenance of water lines	Regular assessment and maintenance of water lines is required to prevent leaks. Drinker height, water pressure and the drinker lines should be flushed and maintained or replaced on a regular basis. It may be instructive to consider a more suitable water system, such as watering cups in replacement of nipple drinkers.
Initial litter quality	Poor litter quality and absorbency may contribute to the formation of 'cake' and wet litter. Ideally, litter should be replaced between flocks or at the very least the 'cake' should be removed.

* as judged by the industry personnel who responded to the survey

Nutritional causes of wet litter identified in literature

Cause identified	Suggested prevention
Gut integrity	Whole grain feeding can be used as a strategy to improve gut integrity. Whole grain feeding has been found to lead to a healthier digestive tract and less watery faeces. Addition of NSP degrading enzymes to wheat-based diets, such as xylanase, reduces gut viscosity and promotes gut integrity.
High levels of water intake	Increased intake and output of water can lead to wetter faeces and hence wetter litter. Minimising voluntary water intakes requires dietary regimes that closely meet the nutritional requirements of the flock; contact your company nutritionist.

Conclusions and Recommendations

- To maintain acceptable litter quality, moisture evaporation should be encouraged by keeping a warm, ventilated shed.
- Improper drinker management can lead to leaks along watering lines, excess moisture in the litter and a cooler microenvironment in the water spillage area which will prevent evaporation. Therefore, it is important to undertake regular maintenance on watering lines.
- Litter 'cake' often occurs at sites of leaks. Evaporation can be improved in these areas by removing the 'cake' and aerating the litter below. Poor litter quality and absorbency may contribute to the formation of 'cake' and wet litter. Ideally, at the very least the 'cake' should be removed between flocks.
- The practice of whole grain feeding was identified as a strategy to improve litter quality to varying extents by 53% of respondents, which included some very convinced advocates of this approach. The accepted dogma to explain this is that whole grain feeding enhances 'gut integrity' which in turn leads to a healthier digestive tract and less watery faeces.
- The key message to keeping litter dry and friable is monitoring and prevention.



More information

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