

Causes and Prevention of Wet Litter in Broiler Houses¹

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To obtain maximum broiler production potential, management of the poultry house environment is essential. An important measure of a suitable environment is proper maintenance of poultry litter. Litter is defined as excreted manure mixed with bedding material.

Both heating and ventilation systems must be continually monitored to ensure that the moisture content of the litter is controlled and the litter remains friable. If the moisture content becomes elevated and the litter is allowed to become "sealed," then the birds are being grown on a continually damp, slippery and sticky surface. This sealed litter is often referred to as being "caked." In this condition, the litter is simply saturated with water and the water is unable to escape. A severe litter moisture problem can result if large areas of the house floor surface are caked. It is more common, however, to find localized areas of caking near leaky watering cups, nipples, troughs or roofs. The litter in these house locations must be continually stirred, raked or replaced to prevent the problem from becoming worse.

If litter is not kept at an acceptable level, very high bacterial loads and unsanitary growing

conditions may result producing odors (including ammonia), insect problems (particularly flies), soiled feathers, footpad lesions and breast bruises or blisters. Expect carcass downgrading at the processing plant when birds are reared under such poor conditions. In a well-managed broiler house, litter moisture normally averages between 25 to 35 percent. Litter that is managed correctly with the moisture content kept within the acceptable range can be reused if no disease or other production problems occur. On the other hand, caked litter must be removed between flocks and replaced with new litter.

There are several causes of wet litter. A number of control measures can help prevent wet litter problems.

Watery Droppings

Diarrhea can be caused by nutrition and/or infectious agents. High intake of the minerals potassium, sodium, magnesium, sulfate or chloride can lead to excessive water consumption and wet droppings. If a wet litter problem occurs, feed levels of sodium and chloride (salt) should be determined. It is possible that a feed mixing error has occurred,

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resulting in an excess of salt in the diet. The water should be checked periodically for mineral concentrations, especially for sulfate and magnesium. Poor quality dietary fat or rancid fat can lead to wet fecal droppings. Likewise, using feed ingredients such as wheat, barley, rye or cassava (tapioca or yucca) will often result in excessively wet droppings. To control wet droppings associated with some feed ingredients, it is usually necessary to use a commercially available enzyme preparation in the diet if wheat, barley or rye are used for diet formulation.

Moldy Feed

If broilers are provided moldy feed ingredients, consumption of mycotoxins may cause the droppings to be excessively wet. Mycotoxins are known to irritate the digestive tract and to cause marked pathological changes in the kidneys. Ochratoxin, Oosporin and Citrinin are mycotoxins known to cause these changes. Such changes can lead to increased water consumption and wet droppings. To prevent mycotoxins from becoming a problem, good quality feed ingredients must be used in broiler diets. Feed handling equipment must be cleaned and disinfected periodically. Caked and moldy feed lodged in handling equipment can contaminate feed as it passes through the equipment; thus any caked feed must be routinely removed.

Disease

Numerous diseases cause poultry to excrete wet droppings. This effect may be primary where an infectious agent directly damages the alimentary canal resulting in diarrhea. Secondary effects may occur where birds go off feed but maintain water consumption, resulting in a higher moisture content of the droppings. Coccidia infections result in direct damage to the gut and will result in wet droppings. Control of coccidiosis through the use of an anticoccidial supplement in the feed is essential because if not controlled, coccidial infection may lead to necrotic enteritis and wet litter.

Bacterial infections caused by *Escherichia coli*, *Camphylobacter jejuni* and *spirochaetes* will also result in wet litter. In addition, several viruses, such as reovirus and adenovirus, have been implicated as

causative agents of diarrhea. Viruses associated with malabsorption of nutrients have an adverse effect on the consistency of the bird's droppings.

Climate Control and Equipment Failure

Those involved in the poultry industry have little control over the ambient temperature and humidity outside the poultry house. Nevertheless, temperature and humidity largely influence water consumption and impact litter quality. For example, high temperatures within a broiler house lead to increased water consumption and wet litter. When high humidity accompanies high temperatures the problem can become so severe that it becomes very difficult to properly maintain the litter in a dry and friable condition.

Leaking watering systems, when not maintained in good working order, can cause wet litter problems. The in-line water pressure must be within the manufacturer's specifications. Roofs should be leak-free and ventilation systems should move an adequate amount of air to keep litter moisture levels in the proper range.

Bedding Type

There are a limited number of bedding materials that can be used in broiler houses. Any material that is in contact with the birds must be nontoxic, and able to absorb water and subsequently release the moisture to the atmosphere. The material must be readily available in sufficient quantities. Most importantly, it must be economical.

Quality soft wood shavings are the most widely used bedding material and are the product of choice if available and competitively priced. Straw, rice hulls, composed municipal garbage, and shredded cardboard have not proved to be useful bedding materials. These materials have met with limited success because of their low moisture absorption and release qualities which has led to litter caking. The proper choice of material is essential and will reduce problems associated with litter management.

CONCLUSION

Maintaining moisture levels of poultry house litter in the proper range is essential if the production potential of the flock is to be realized. To accomplish this, management practices must ensure that high quality feed is provided to the flock, disease organisms are not permitted to enter the premises, and adequate ventilation systems and quality bedding material are used.