
Evaluating wet droppings as a useful guide to bird health

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The presence of wet droppings in the broiler house is a useful early warning sign that bird health is not as optimal as it could be. If the problem is increasing and starting to affect a significant proportion of birds, then the underlying cause needs to be identified and addressed as a matter of urgency. The normal intestinal transit time for commercial broilers is between four and eight hours, so issues have the potential to develop very quickly – often within 48 hours. It is therefore important to identify the cause quickly and to take appropriate steps before a major issue develops. Once corrective measures are in place, birds usually recover equally quickly.

The problem for poultry managers is that wet droppings are a common finding associated with a wide range of potential issues. In many cases, identifying the most likely cause requires managers to call on all their poultry experience and apply some detective skills. This article is a guide to that detective process, and a number of key questions which need to be asked.

Renal or intestinal?

The causes of wet droppings can be classified generally into renal or intestinal. Different factors like infectious bronchitis (IB) virus or ochratoxins can damage the kidneys, thus resulting in increased diuresis and wet droppings. Increased diuresis might also occur if there is excessive intake of water or disrupted electrolyte balance. The intestinal tract can be affected by a number of pathogens that cause damage which can directly lead to a change in the droppings. On the other hand, there are a number of non-infectious issues that might play a role in the intestinal tract as well.

Visual clues

The first thing to note is the appearance of the droppings: do they contain much undigested feed, how much water do they



Wet litter.

contain, what colour are they? For example, very watery, clear droppings, without the usual white component, tend to suggest diuresis (flushing) caused by kidney damage.

The droppings might also be covered with orange slime which is thought to consist of excess mucus produced by Goblet cells and an increased number of enterocytes sloughed from the mucosa. This is an indication of intestinal irritation which is often attributed to bacterial enteritis or *Eimeria maxima* infection, although it can also occur in birds that have been off feed for a couple of hours. Moreover there might be undigested feed in the faeces, which is another sign of an intestinal problem and poor digestion.

It can be difficult to gauge the amount of water in droppings because the litter can absorb varying amounts of moisture. However, a simple way to assess the water content is to place some absorbent paper on the floor and then remove it when it has droppings on it. The water will soak into the paper and leave a visible ring which can be measured and used as a basis for assessing and monitoring water content.

Although the size of the ring may vary depending on the paper used, the size of the faeces (bird's age), the time of exposure, etc, when used regularly, this procedure can give an indication of the proportion of birds with wet droppings and whether the problem is getting better or worse over

time. Examination of the residue at the centre of the dropping may also give clues to the cause of the problem; for example the presence of undigested food or a slimy consistency.

Birds may go off feed as a reaction to any form of infection, whether inside or outside the intestinal tract, but may continue to drink normally, thus producing wetter droppings. It is therefore worth looking at feed consumption and water:feed ratio whenever wet droppings start to increase in prevalence. Normally the feed intake should increase daily and water:feed ratio should stay more or less stable.

Infectious or non-infectious?

The causes of wet droppings can be classified generally into infectious and non-infectious. A number of pathogens can infect the intestine and cause damage which can directly lead to a change in the droppings.

Wet droppings may be the result of a single agent but are more often a multi-factorial issue, associated with a number of different pathogens with additive negative effects.

Coccidiosis, caused by infection of the gut by *Eimeria* parasites, can result in blood or thick mucus being present in the droppings.

E. maxima causes haemorrhages in the

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small intestine and thick mucus, while *E. acervulina* infection has less impact and the first signs may be weight loss accompanied by a watery, off-white diarrhoea. *E. tenella* is infamous for causing bloody caecal droppings.

If coccidiosis is suspected then a sample of birds should be taken for necropsy; macroscopic post-mortem examination of the intestinal tract will reveal diagnostic changes in the gut and microscopic examination of faeces or scrapings from the intestinal mucosa will confirm the presence of the parasite.

For example, haemorrhagic lesions in the central part of the small intestine suggest *E.*

necatrix, and those in the caecum, *E. tenella*. *E. maxima* produces few marked changes in the small intestine until day five of infection, after which severe infections are associated with numerous small haemorrhages.

At post-mortem, *E. acervulina* may show greyish-white, pinpoint foci or transversely elongated areas in the upper intestinal mucosa, which might also be visible from the serosal side of the intestine.

Dedicated treatment

If clinical coccidiosis is diagnosed, a dedicated treatment (amprolium, toltrazuril or sulphonamides) via the drinking water is

advisable as well as close monitoring of the efficacy of the anticoccidial management program. If the problem persists at integration level, then any existing anticoccidial programme needs to be re-assessed to enhance management of the disease – perhaps by changing the rotation of anticoccidials in feed or introducing suitable vaccination. Uncontrolled infections can lead to significant economical losses and secondary diseases like necrotic enteritis.

Coccidiosis is also well known for its disrupting effects on the normal intestinal flora, leading to so-called dysbacteriosis (a non-specific enteritis) and subsequent diarrhoea. Dysbacteriosis may also be the result of a change in feed or some other stress factors which upset the usual bacterial flora in the gut. In addition, several viruses, such as coronavirus, reovirus and adenovirus, may result in diarrhoea.

Investigating feed and water

Both feed and drinking water quality should be prime suspects whenever wet droppings become prevalent. High mineral (potassium, sodium, magnesium, sulphate or chloride) content in feed or drinking water can result in wet droppings as birds drink more water in order to maintain their electrolyte balance.

Wet droppings should prompt a check on feed quality, especially if there have been any recent changes. Is it possible that a diet change or mixing error has occurred or that a change of nutritional value or quality of a raw material is responsible for the upset? Perhaps there has been a change of supplier or new batch of raw materials?

The level of salt and other minerals should be checked and also the quantity and quality of protein, fats and carbohydrates (if cereal based).

Poor quality or rancid dietary fat can produce wet droppings. Likewise, feed ingredients such as wheat, barley, rye or cassava (tapioca or yucca) will often cause excessively wet droppings, due to high content of soluble non-starch polysaccharides.

The digesta produced by the high levels of non-starch polysaccharides also makes conditions favourable for potentially harmful bacteria, such as *Clostridium perfringens*, thus increasing the likelihood of bacterial involvement. The answer in these cases may be to use an enzyme preparation in the diet.

If the paper test reveals what looks like wet, undigested feed at the centre, then there could be a number of causes and a little deductive reasoning may be needed to arrive at a diagnosis. It is a question of ruling out possible causes.

The first thing to consider is whether there have been any changes in the feed. Are fat stability and peroxide levels okay? Perhaps perform a 20 hour AOM (active oxygen method) test. High level or unbalanced protein will not be entirely utilised and will

lead to wet droppings as well. If the feed is soya-bean based, check its quality and inclusion level.

Overheating and underheating are equally undesirable; consider checking other parameters such as the concentration of trypsin inhibitors, Urease Index, solubility in KOH (potassium hydroxide), PDI (protein dispersability index), etc.

Feed form is also important. Very fine grinding tends to result in irritation of the intestines and cause wet droppings; coarse grinding, and sometimes whole grains, improve overall intestinal integrity.

Mycotoxins, associated with mouldy feed ingredients, are another possible cause of wet droppings. They irritate the intestines, causing non-specific enteritis and can cause changes in liver and kidneys which increase water consumption.

Good quality feed, combined with regular cleaning and disinfecting of feed handling equipment, including the removal of any caked and mouldy residues lodged in the system, should help prevent any such problems. Sometimes, local knowledge can throw some light on the culprit. It is not uncommon for Zoetis field technicians to become aware of different businesses in the same area suffering from similar problems, all of which can be traced to feed from the same mill.

Finally, environmental conditions should not be overlooked as a potential cause of

wet droppings. High temperature and humidity in the broiler house will increase water consumption and the moisture content of droppings, and should be checked if there is a sudden problem.

If there is orange mucus present, then this may be a sign that the bird has been off feed for a few hours, and it is worth checking that this is not due to a temporary disruption of supply, perhaps while one batch of birds was prepared and removed for slaughter.

Wet droppings, lost revenue

One of the more obvious effects of wet droppings, and the associated wet litter conditions, is foot problems such as hock burn or pododermatitis. The latter being particularly related to high pH conditions and the level of soya bean meal in the feed.

The blackened skin progresses to form ulcers and fibrosis on the underside of the foot pad and sometimes the breast area. Obviously this can have a major financial impact for those poultry producers who sell chicken feet, for example to Asian markets. Foot condition is also a key welfare indicator in many markets and may be a standard part of quality assurance checks.

Beyond the obvious impact of wet litter on foot health, all of the conditions related to wet droppings directly impact the bottom line. Feed conversion (the utilisation of feed



Abnormal droppings.

and transforming it into body weight) is a particularly important production parameter, and wet droppings are an early indication that digestion and absorption of the feed is not as good as it could be.

At best, it shows that birds are not as healthy and productive as they should be; at worst, this common sign can herald a serious disease outbreak.

The wide range of potential causes of wet droppings, from feed and infection to environmental conditions, means that other factors have to be taken into account and a little detective work undertaken to uncover the most likely cause is needed. However, this sign should not be ignored, and a little deductive reasoning can pay dividends in the long run when the case is solved. ■