Water can be friend or foe to a poultry operation

By the Technical Team, Ziggity Systems, Inc.
101 Industrial Parkway East, Middlebury, Indiana 46540, USA

Maintaining a good environment inside your poultry barn is necessary if you are to have healthy and profitable flocks, growout after growout. And, achieving that good environment means paying close attention to and controlling the water in your poultry barn — the moisture in the litter, the moisture in the air and the water in the enclosed drinking system.

Wet Litter

Start with the litter. Litter is the bedding material used in the poultry barn plus excreta, feathers and spilled feed and water. Because of its makeup, litter will always have a certain amount of moisture. Birds retain only about 30 percent of the water they drink. About 20 percent goes into the air as the birds exhale, and the birds excrete the remaining 50 percent in their feces.

Another source of wet litter is the watering system itself. Adjust drinker height and water pressure to minimize water spillage. Remember, virtually all watering systems can turn into irrigation systems if the water pressure settings result in water discharge greater than what the bird can retain in its beak during the drinking process. Also, locate and repair any watering system or drinker leaks immediately.

Wet litter — sometimes called caked litter — poses a never-ending series of threats to broiler flocks. Here are some of the health problems created by wet litter:

• Wet litter releases ammonia, a natural by-product of the chemical reaction between manure in the litter and moisture. Ammonia is at its strongest concentration at litter level, where the chickens live. The ammonia dissolves in the fluid around the birds' eyes, causing irritation. In large concentrations, the

birds can go blind. In addition, ammonia can irritate the protective lining of a bird's respiratory system, making it more susceptible to disease.

• Wet litter promotes the growth of a variety of parasites, bacteria and viruses that can harm poultry production.

Coccidiosis infections damage the birds' intestines and digestive systems. These infections are caused by a parasite that thrives in wet litter. Once acquired, coccidiosis is almost impossible to eliminate; but maintaining optimum litter conditions helps keep it under control.

Bacteria, such as E. coli, salmonella and campylobacter as well as viruses, such as reovirus and adenovirus, thrive in wet litter conditions. All pose severe risks to the poultry flock and grower profitability.

• Wet litter attracts flies and rodents. Both pests can carry diseases that can infect the flock. And, rodents can become a direct threat to the birds themselves.

• Wet litter makes the poultry barn floor slippery. This contributes to leg deformities in broilers. Wet litter also increases foot lesions, breast blisters, skin burns and scabby areas — all conditions that can result in downgrades at the processing plant.

Ziggity recommends farmers strive for friable litter — litter with a moisture content around 20 to 25 percent. Litter that is too dry creates dusty conditions that can irritate the birds' airways. Friable litter keeps the health problems created by wet litter to a minimum.

Humidity

Ventilation is the key to drying the litter and moving that moisture out of the poultry barn. But, removing that moisture from the birds' environment requires more than simple air movement. It also requires heat.

"Humidity" is the amount of water in the air. If the humidity is 20 percent, the air contains 20 percent of the water it can hold. However, the warmer the air, the more water it can contain. For every 20 F (11 C) increase in temperature, the air's ability to hold water doubles. Therefore, the key to drying your litter is warm air.

In warm weather, it makes sense to ventilate the barn. The air movement helps keep the birds cool, as well as removing moisture from the barn.

In cooler weather, you'll find it necessary to heat the barn, not only to protect the birds from cold, but also to continue the evaporation process. Too often, farmers will attempt to save money by cutting back on heating. Research by University of Georgia poultry scientists shows, however, that the money saved on fuel is far outweighed by the money lost on underperforming birds as a result of elevated litter moisture and ammonia.

Watering System

While enclosed watering systems have greatly improved the quality of water going to the flock and reduced the chance of diseases spreading through the drinking water, you still need to monitor the quality of water in the system. Begin with the source of your water. If your water source is not municipal or community water, but rather well water, you need to test it on a regular basis to ensure the water quality. You also need to take precautions to ensure that your well does not become contaminated by rainwater runoff.

Ziggity recommends these precautions to protect the well water:

• Maintain the well casing about 16 inches above ground level.
• Construct a concrete pad around the casing or slope the soil away from the casing to divert rainwater.
• Periodically inspect the well cap to make sure it is not missing or damaged.
• Some farmers provide even better protection for the wellhead by constructing a small shed around it.

Regardless how clean your water supply is, bacteria will still find a way into your watering system. The bacteria will attach to the walls of the watering line and begin to exude a sticky substance, creating a biofilm. Once established, a biofilm will grow into an active colony of pathogens that can become a source of disease for your birds. Besides bacteria, the biofilm will attract everything else in the water, including viruses such as avian influenza. In addition, a biofilm can grow to the point where it inhibits the effectiveness of the drinkers by coating internal drinker parts, hindering the way they work.

Adding chlorine to the water may have some limited effect on free-floating bacteria, but research has shown that bacteria embedded in biofilm are highly resistant to chlorine interventions. Thus, you need to remove the biofilm itself — the natural habitat for bacteria.

The best way to rid a system of biofilm is with high pressure flushing. Ziggity recommends a regular schedule of high-pressure flushing with 1.5 to 3.0 Bars (20 to 40 psi.) pressure to dislodge biofilm. An additional, and highly effective, tool for eliminating biofilm is the use of a hydrogen peroxide-based cleaner. Properly formulated, hydrogen peroxide is a powerful oxidizing agent. The oxidizing action scrubs the interior of the pipe clean of biofilm, making the system ready for flushing.

Water is a vital element to any poultry operation. However, too much water can become an enemy to good production. Successful poultry farmers are the ones

who manage their watering system, litter and air quality to have the right amount of water and moisture.

Ziggity Systems, Inc. is the only manufacturer 100 percent focused on poultry watering for improved performance. For more information, write Ziggity Systems, Inc. at 101 Industrial Parkway, P.O. Box 1169, Middlebury, Indiana 46540-1169 USA, call +1 574.825.5849, fax +1 574.825.7674, or visit its Web site at ***www.ziggity.com****.*