

Corrosion poses major threat to poultry operation's ROI

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A number of factors can negatively impact a poultry producer's return on investment, but corrosion is probably the most serious. Corrosion can happen anywhere in the poultry barn, and the conditions fostered by a poultry operation ensure that it will. So, what can a producer do to bolster ROI against this problem?

Corrosion is defined as the deterioration of materials through a chemical reaction with something in the environment. The most common example of corrosion is iron rusting. However, corrosion is not confined to just metal. It can and does affect plastics, concrete, wood and other materials. In this article, we will discuss different sources of corrosion in a poultry house and what producers can do to combat it.

Probably, the most noxious chemical created by a poultry operation is ammonia. Ammonia is the natural by-product of the chemical reaction between manure in the litter and moisture. The wetter the litter, the more ammonia in the air. We usually discuss ammonia in terms of the impact it has on the birds. Ammonia, however, also attacks metal components in a poultry house. This includes metal fasteners, heaters, steel walls and just about any other metal object.

Most enclosed watering systems and feeding systems primarily use plastic components, which are not affected by ammonia. The primary exception is the metal support pipe used to hold the water lines. Usually, this is made of a very special galvanized steel that can withstand the corrosive nature of ammonia for several years.

Ziggity recommends controlling ammonia by keeping the litter dry. The best way to achieve dry litter is by managing the watering system so that the birds get all the water they need to thrive, but not so much that it will spill onto the litter/slats.

Some producers find that spraying an acid in the form of a poultry litter treatment helps reduce ammonia releases. The acid attacks the bacteria that facilitate the breakdown of uric acid. Proper use of such treatments is effective and positive. However, overuse or misuse of such products will lead to elevated acid levels and a generally corrosive poultry house environment. Additionally, using these materials could lead to groundwater contamination and could restrict how used litter is disposed of. Again, Ziggity recommends employing ventilation and watering system management procedures to maintain dry, friable litter.

The watering system is particularly vulnerable to corrosion. Many producers regularly introduce chlorine and/or acidifiers into the watering system in an attempt to kill bacteria and viruses in the water. However, chlorine and acid can damage the metal and plastic parts of the drinkers. We know of one producer who had to replace every drinker in his poultry house twice in less than a year because his acidification program was too aggressive. That cost him about \$4,000 — not a good return on investment.

Chlorine seems to work best as a sanitizer when the water is slightly acidic, that is with a pH below 7. pH is a scale — ranging from 0 to 14 — that measures how acidic a substance is. A pH of 7 is considered neutral and a pH above 7 is alkaline.

It is important to note that the pH scale is not a simple one-step measure. It is a logarithmic measure. This means lowering pH from 7.2 to 6.2 increases the acidity of the water by 10 times. Lowering pH to 5.2 makes it 100 times more acidic, and lowering to 4.2 is 1,000 times more acidic.

Producers originally began using acidifiers during the last few days of a flock. The acid reduces the pH in a bird's crop, making the gut less hospitable to bacteria. This, in turn, reduces the amount of contamination at the processing plant. Producers also learned that acidifiers improve digestion of proteins in young birds.

Many producers then began using acidifiers as agents to clean the drinking lines. They would use it about once a week. Producers now are using acidifiers on a regular basis — often continually — to keep the pH of the water below 7. This acidifies the birds' crops, as well as kills bacteria in the watering line. Researchers also determined that chlorine used as a sanitizer is more effective when the water's pH is between 6.0 and 6.8.

However, certain cautions are necessary. First, the chlorine is corrosive to many elements of the drinking system, causing it to fail faster. Another problem is that chlorine is not very effective against bacteria and viruses lodged in a biofilm, and chlorine cannot rid a watering system of biofilm.

Ziggity recommends, as an alternative, using a properly formulated solution of hydrogen peroxide between flocks. Hydrogen peroxide can scrub the components of the watering system of the biofilm, allowing it to be flushed away during a high-pressure flush.

Aside from ammonia, which naturally occurs in a poultry operation, the use of chemicals is responsible for corrosion. Disinfectants that are not biodegradable are the most aggressive of these chemicals. It is probably impossible to raise poultry commercially without the use of chemicals. The best a poultry farmer can do is keep aware of what is used on the farm and how the poultry barn and its elements are reacting. Awareness will allow a farmer to catch a damaging situation before it gets out of control and negatively impacts the return on investment.