

# Managing your watering system to improve feed conversion

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Feed conversion rate is one of the more important figures a poultry producer should know about the flocks he or she raises. Most producers are very aware of this business fact, but many people in the industry are not as knowledgeable about the important role the watering system has in the feed conversion process.

The feed conversion rate is the ratio of feed a bird consumed compared with the bird's weight. For example, if it takes 8 pounds of feed (3.6 kg) to raise a 4-pound bird (1.8 kg), the feed conversion rate is 2.0. What makes this number so important is the fact that feed is by far the biggest expense in raising a poultry flock. In most operations, about 60 percent of the overhead is the cost of feed. So obviously, anything a producer can do to reduce the feed conversion rate will improve profitability.

Make sure you are not wasting feed by operating your mechanical feeding equipment incorrectly, and remember to cull birds that have no chance of making it to market as early in the grow-out as possible. But, you also have to take steps to ensure your birds are as efficient as possible at converting feed into body weight.

Any condition that utilizes energy in a chicken for anything other than meat production hurts the feed conversion rate. Among these conditions are illness, elevated levels of ammonia and temperatures too high or too low. Your watering system and how you manage it can impact many of these.

Ziggity pioneered the use of enclosed, low-flow, nipple-type drinking systems in the 1970s. Poultry farmers immediately saw the advantages of this type of a

system over troughs or bells, which easily collect bacteria and contaminants and spread diseases among the birds. An enclosed system not only keeps the drinking water cleaner and prevents sharing of water, it contributes to drier conditions in the poultry house. Clean water means that birds suffered fewer illnesses, and dry litter contributes to the overall health of the birds.

One disease that was greatly impacted by the drier conditions is coccidiosis. Coccidiosis, a disease affecting primarily young birds, mostly broilers, breeder pullets and turkeys, needs warm, wet litter conditions to propagate. It is caused by a protozoan-type parasite that lives in the intestinal tract of chickens. The parasite can damage intestinal tissues, exposing the birds to bacterial infections, as well as interfering with food digestion and nutrient absorption. The result is depressed feed conversion and weight gain.

It's important to manage the watering system in your operation to promote dry litter. Wet litter results in ammonia releases. Ammonia in a poultry house at 25 ppm (barely noticeable to the human nose) can depress bird growth by 4 to 8 percent and increase the feed conversion rate by 3 to 6 percent.

Some producers have reasoned that if they turn up the water pressure, supplying more water to the birds, the birds will drink more and that will stimulate them to eat more. That logic, however, is faulty. A bird can only drink so much at one time and supplying any more simply results in the water spilling onto the litter. Producers should strive to provide the birds with all the water they need to thrive, but not more that will wet the litter. The key to determining whether there is sufficient pressure in the system is to take litter readings on a regular basis. Strive for friable litter.

Also, be vigilant about detecting leaking drinkers. If the moisture under the watering lines appears to be increasing, decrease the pressure in the lines by 50 percent. Then wait for the litter to crust over dry.

Once the litter is dry, select one drinker line, preferably the one that is the most difficult to keep dry. Adjust the column pressure 1 inch (2.5 cm) higher in the test line. Do not adjust the other lines. Wait for about 24 hours and examine the litter immediately under the drinkers. If the litter is still dry, adjust the column pressure in the other drinker lines up by 1 inch (2.5 cm). Repeat this process until a slight dampness develops under the test line. Repeat this process throughout the growout.

With the advent of enclosed watering systems came a new threat to the flocks. Enclosed systems with their inherently low water pressure are ideal for growing biofilms — active colonies of pathogens that can break away and infect the birds with a variety of diseases.

Many producers find it beneficial to introduce a sanitizer into the watering system to combat biofilm and promote bird health. One of the most common sanitizers is chlorine. However, sanitizing agents, such as chlorine, can alter the water's taste to the point where the birds will not drink. This in turn hurts meat production because the birds will reduce the amount of feed they eat. Broilers drink approximately 1.6 to 1.8 pounds (0.7 to 0.8 kg) of water for every pound (0.45 kg) of feed they consume.

Ziggity has long advocated producers follow a regular schedule of high pressure flushing to combat biofilm and sediment in the lines. Hydrogen peroxide based cleaners have proved very effective at scrubbing the watering system in preparation for the high pressure flush.

Temperatures that are too cold or too hot also hurt the feed conversion rate. The ideal temperature range for chickens is 65 to 75 degrees (18.3 to 23.8 degrees C). If the weather is cold, many of the calories from the feed the birds consume are used to maintain body heat rather than be converted to meat. Some poultry

farmers will combat this by reducing their ventilation during cold weather. This, however, only promotes wet litter and ammonia releases. You'll get a better return on your money by boosting the heat and maintaining the ventilation to rid the house of ammonia.

In warm weather, it makes sense to ventilate to keep the birds cool and to remove moisture from the house. However, in high heat the birds will reduce their feed intake because the digestion process increases their body temperatures. Some farmers find it advantageous to withhold feed during the hottest parts of the day and allow feeding only in the morning and evening. However, the birds should have unlimited access to water.

Watering works in tandem with ventilation to cool the poultry barn and the birds. For instance, foggers reduce the house temperature when humidity is low by injecting fine water particles into the warm air. As the water vaporizes, it absorbs heat from the air. Ventilation then pushes the water vapor and the heat from the house. This can lower the house temperature by as much as 10 degrees F (5.5 degrees C). Evaporative cooling pads may be even more effective at reducing house temperatures.

If foggers are employed, use them intermittently. If left in continuous use, they may raise the humidity in the house too much and cause the litter to become wet. Foggers and cooling pads are not particularly effective if the humidity is high.

The feed conversion rate of a flock is a key measure in how profitable the flock is. It is in your best interests to do everything you can to keep that number as low as possible flock after flock. So, be sure to manage your watering system in order to achieve the best possible feed conversion.

*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](http://www.ziggity.com).*