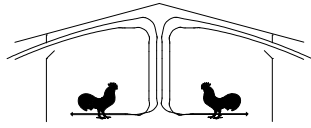




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Poultry Housing Tips

Water System Check-Up

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When was the last time a check was conducted on the farm water system? If the answer to this question is “I don’t know” then it is something that should be conducted right away. The house and farm water system should be checked on a regular basis to ensure that adequate quantity and quality water is available. Water, along with temperature management, good air quality, clean formulated feed and protection from disease are the five basic needs of poultry to optimize bird performance. Water and feed consumption are directly correlated, meaning that if one decreases, they both decrease. So if water consumption drops for a few days, then feed consumption will decrease as well. While water is an important nutrient, it is also a critical component of the environmental control system when using evaporative cooling to keep the birds cool in hot weather. The following provides points in the water system that should be evaluated to ensure that plenty of water is available when the birds need it.

When checking the water system, the complete system should be evaluated. This means starting at the well and working through to the end of the drinker line. Below is a list of items that should be considered when checking the water system on a poultry farm.

1) Well:

At the well, a proper well head should be in place to ensure that rain water and/or runoff does not contaminate the water at its source. A water quality test should be conducted regularly (about once a year) to determine the mineral content, pH and hardness. Low or high pH, high mineral content, or a combination of elevated minerals can impair equipment function and efficacy of vaccines or other medications administered through the drinking water. For example, iron in the water from wells with high iron concentrations can be oxidized. The resulting material is a brownish-reddish particulate that can plug water filters and result in leaky drinkers. It is not uncommon in Georgia to speak to producers that have to change water filters every 2-3 days during periods of high water usage. Unfortunately, oxidized iron is not the only thing that can plug water filters. Oxidized manganese, magnesium or sediment can cause regular changes of water filters. If a water test indicates a mineral problem, a water treatment professional should be consulted to determine what steps are required to improve the water quality.

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Depending on state regulations, most states require that new wells be tested for microbial contamination and normally this specifically looks for the presence of coliforms which can indicate fecal or runoff contamination. Water devoid of any microorganisms is desired, because even nonpathogenic organisms such as iron bacteria can cause the formation of biofilm which can restrict water flow and even stop up nipples on drinker lines. If bacteria are present, consult with a well professional or the county agent to determine the best protocol for shock chlorinating the well. While this procedure can reduce microbial counts from wells, it may have to be repeated to keep the microbial counts low.

Water volume and availability are important. When the water use on a poultry farm is examined, the water used by the evaporative cooling system during hot weather can be as much as three times greater than water consumed by the birds. Therefore when digging wells and determining how much water is needed by the farm the equation should include evaporative cooling pads, fogging nozzles, bird water consumption and the number of poultry houses. Pipe sizing should be adequate to supply both the evaporative cooling needs as well as the drinking water. Information on pipe sizing can be found at www.poultryventilation.com. The water pressure should be high enough at the well to ensure 60 psi at the house. In most cases, this means that water pressure at the well should be 10 to 20 psi higher depending on the well location and orientation to the house. While 60 psi at the house is desirable, it should be noted that the pressure going to the drinker lines may be different and the drinker manufacturers' guidelines should be followed to prevent water line regulator damage.



Figure 1. Water from two wells on the same farm



Figure 2. Water panel with two water meters.

2) House water panel:

Water management of the water system at the house water panel involves monitoring water pressure at several locations. Some house environmental controllers and alarm systems can be wired with gauges/sensors to detect drops in water pressure. Water pressure coming from the well should be checked. Water pressure decreases after

flowing through the water filter, pressure regulator and medicator and as a result should be monitored prior to entering the house. Water pressure for individual drinker systems may vary, but in general it is somewhere around 20 to 30 psi. Water pressure reduction at the filters should be monitored very closely and filters should be rinsed or replaced as they become clogged with foreign material.

3) Medicator pumps.

Totally enclosed water systems have been adopted by the poultry industry. One of the biggest benefits from this type of system is the cleanliness and ability to prevent bacteria and other foreign materials from entering the drinking water. Birds obtain the water directly from the water system on demand by pushing a pin located on the bottom of the drinker line. Medicator pumps are a normal component of most poultry house water systems and are used to deliver vaccines, medications, water treatment and sanitation products. However, this is a weak point in the system. Open five gallon buckets are the normal container used to mix stock solutions to be delivered through the drinker system and are a potential contamination source of the drinker line. A covered container should be used to prevent foreign material from being introduced into the water line.



Figure 3. Open buckets for stock solution can lead to water line contamination



Figure 4. Lidded buckets for stock solution.

4) Drinker lines:

The regulator, water pipe, nipple and standpipe are all components of the water line that should be examined and maintained. For the most part these components are internal with the exception of the standpipe which is usually a clear tube containing a ball that floats to monitor water pressure with an opening at the top to allow air in the lines to escape. This opening is a potential spot for foreign debris such as dust to enter the system. It is not unusual to observe stand pipes in broiler houses that are so dirty that the ball can not be seen. Efforts should be made to regularly clean and sanitize the drinker line. One of the simplest things to do in the process is routine flushing of the water lines. Water lines should be flushed following the use of the medicator to prevent bacteria or other organisms and material from accumulating. In between flocks, water lines should be sanitized and flushed with products that are approved by the drinker manufacturer and integrator to prevent damage to the water system or negative effects on the birds. A general rule for how long to flush water lines is about 1 minute for every 100 ft (30m) of water line. Therefore, in a 500 ft broiler house with water lines length around 250 ft, then the line should be flushed for about 2-3 minutes. Leaky drinker lines can occur due to improper use of water line sanitizers or from the introduction of foreign materials into the water (i.e. oxidized iron precipitant). However, regular maintenance of the water lines can prevent this and ensure that maximum equipment performance is obtained. Care should be taken when choosing and using water line cleaners. Consult with the drinker manufacturer before introducing a solution that could possibly damage the drinker system and be sure to follow product guidelines on the concentrations to be used.

Water lines need to be managed correctly during the flock to obtain optimum performance. Drinker line height and pressure should be started low at the beginning of the flock and increased as the birds get older. Water pressure that is set too high during the beginning of the flock may restrict chick water consumption due to the inability to

push the pen properly. High water pressure can also result in more water wastage and wet litter. Drinker lines that are too high can restrict bird water consumption while water lines that are too low can result in wet litter that will have secondary effects. This could include a reduction in air quality (high ammonia), increased incidence of disease and increased carcass downgrades due to poor paws or breast blisters and burns.

5) Water meters:

Most houses have water meters on the drinker line. Some farms have the water meters wired into the environmental controller which can monitor daily water consumption and keep the history for the flock. The use of multiple water meters can provide additional information that can be utilized by producers in the daily management of the house and farm. This topic has been discussed in several newsletters that can be found at www.poultryventilation.com. While having the water meter hooked to the controller is easy and provides accurate water consumption data, it is not a necessity as daily recording of the water meter reading can provide similar information. Water consumption should be monitored daily, because sudden increases or decreases can indicate issues with either the birds (environmental stress, disease) or the water system (leaks, air locks, water restriction due to residue buildups).

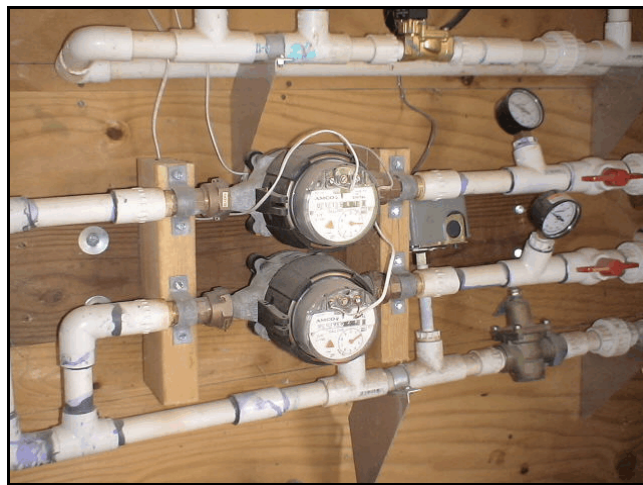


Figure 5. Multiple water meters in a house

Regular maintenance and good drinker line management during and in between flocks can improve both drinker and bird performance while extending equipment life. Care should be taken when running products through the drinker line to ensure that none of the internal parts are damaged and that no microorganisms are able to thrive. Before applying any water treatment a water test should be conducted. Application of treatments to control microbial growth, such as chlorine, can cause precipitants to form in water that has high iron or manganese concentrations. This will clog filters and possibly result in leaky drinkers neither of which will be good for bird performance. Wells should be tested routinely to ensure that water quality will not affect drinker function. By taking some time to do these steps broiler and drinker line performance should be optimized



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