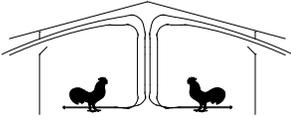




The University of Georgia

College of Agricultural and Environmental Sciences
Cooperative Extension



Poultry Housing Tips

How Much Water Does a Broiler House Use?

Volume 21 Number 5

April, 2009

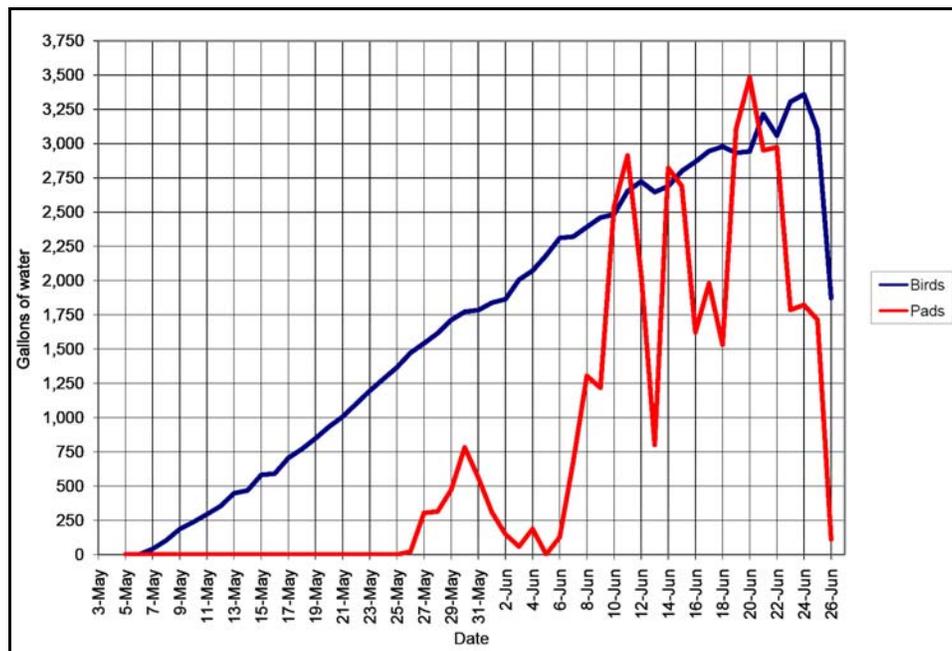


Figure 1. Daily bird and evaporative cooling system water usage.

Water is a crucial commodity when it comes to producing broilers. From the day they are placed until the day they are sold a broiler will drink approximately a quart of water every pound of feed consumed. If an average life time feed conversion of 1.75 is assumed, this means that it takes a little less than a half of a gallon of water for every pound of bird grown. To put this in perspective, on a farm where a four-pound-broiler is grown the birds in each 40' X 500' house will consume approximately 50,000 gallons of water over the course of the flock. For a large broiler house (50' X 500'), growing a large broiler (+ 7 lbs) this can increase to nearly 100,000 gallons of water per flock.

Water is also vital in grower's efforts to keep birds comfortable during hot weather. While bird water consumption is fairly easy to predict, predicting evaporative cooling system water usage is much more difficult. Evaporative cooling system water usage depends on a variety of factors. These include: the type of evaporative cooling system used (6" pads, fogging pads, interior fogging systems), the amount of air being cooled, evaporative cooling system set temperature, and outside temperature as well as relative humidity. As a result, the amount of water used to keep the birds cool during the summer months can vary significantly not only from farm to farm, but flock to flock, and hour to hour.

To get real world understanding of broiler house water usage, bird and evaporative cooling system water usage has been continuously monitored in a 50' X 560' broiler house growing a 6.5 lb bird near Athens, Georgia for the last two years. The house is equipped with approximately 250,000 cfm of tunnel fan capacity and 700 square feet of 6" evaporative cooling pad. Bird, ventilation and evaporative cooling system management are fairly typical to what is found on most farms growing a large broiler.

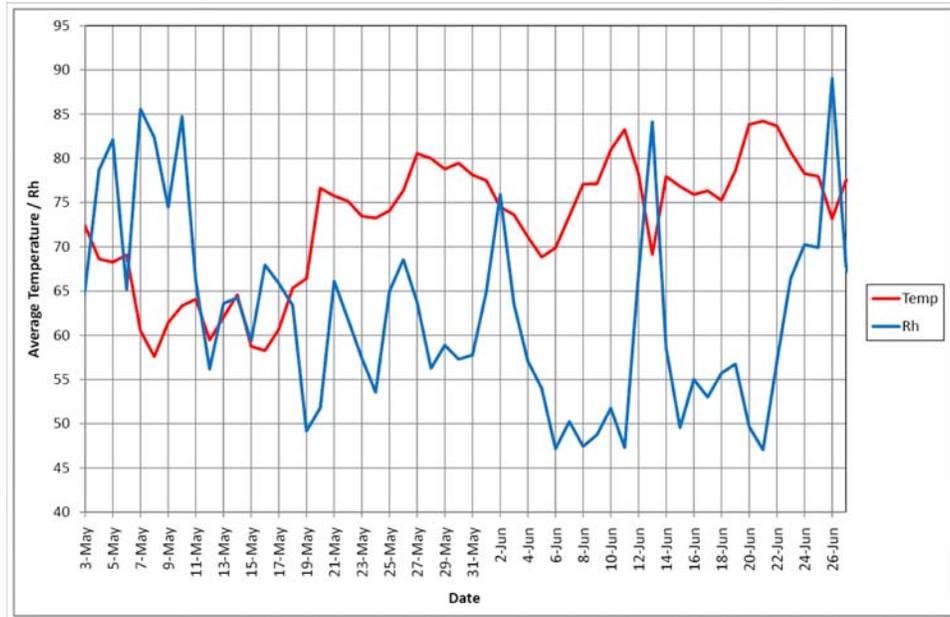


Figure 2. Average daily outside temperature and Rh for flock shown in Figure 1.

Figure 1. illustrates daily bird and evaporative cooling system water usage over an early summer flock. As one would expect, daily bird water usage increases fairly steadily over the course of the 54 day flock, peaking at approximately 3,300 gallons on the last day of the growout (approximately 32,000 birds). Evaporative cooling pad water usage also tended to increase over the course of the flock as the desired temperature decreased and the fan power required to keep the birds cool increased. Although there was a clear increase, there was considerable variation. Much of the variation in water usage was attributable to changes in outside conditions (Figure 1). Relatively cool and humid days (i.e. June 13) resulted in considerably less water usage by the evaporative cooling pads (Figure 2.), while hot dry days resulted in considerably more water usage by the evaporative cooling pad system (i.e. June 20 - 22). During the last couple of weeks of the flock daily evaporative cooling pad water usage varied by as much as 1,500 gallons due to changes in outside temperature and relative humidity.

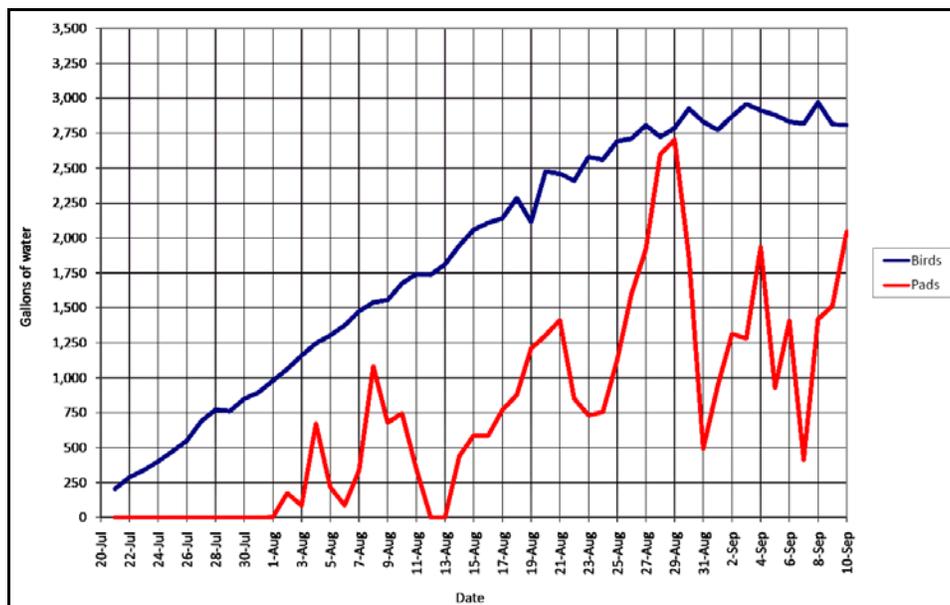


Figure 3. Daily bird and evaporative cooling system water usage for late summer flock.

Figure 3. illustrates water usage during a late summertime flock. There was more water used by the evaporative cooling system early on in the flock when the birds were two to three weeks old than during the early summer flock. The high peaks in water usage seen in the last couple weeks of the early summer flock were not seen during this flock due to moderating outside temperatures experienced towards the end of the flock.

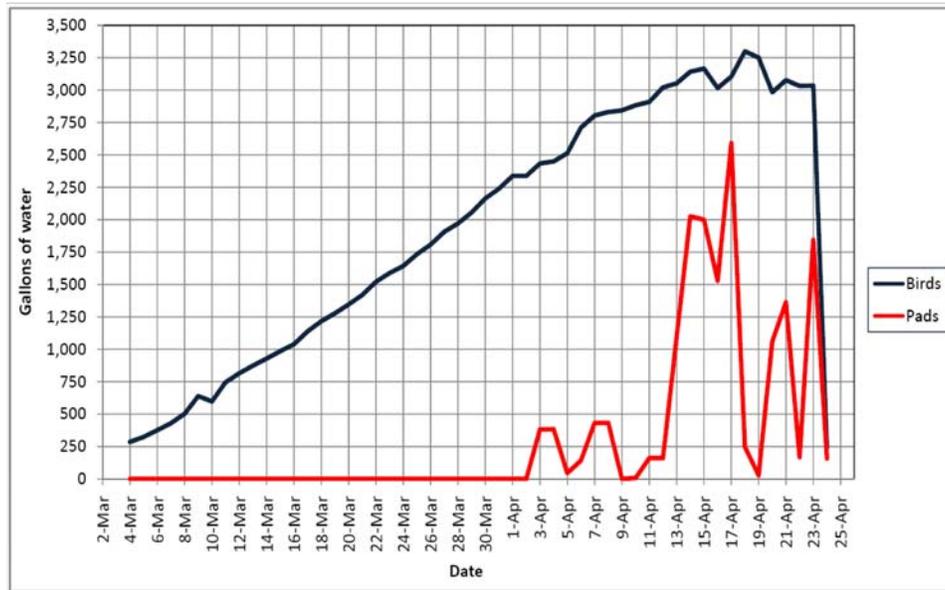


Figure 4. Bird and evaporative cooling system water usage for late spring flock.

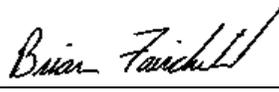
Figure 4 illustrates water usage during a spring flock. As one would expect, evaporative cooling system water usage was considerably less in the spring than during the warmer weather summer flocks. Water usage in the spring was relegated to the last couple weeks of the flock.

Evaporative cooling system water usage on this particular farm ranged between 40,000 and 45,000 gallons during the summertime flocks and was approximately half the total bird water consumption. Springtime pad system water usage ranged between 10,000 and 20,000 gallons. Though pad systems can use a significant amount of water during hot weather, it is interesting to note that the evaporative cooling system on this farm only accounted for approximately 20% of the farm’s total yearly water usage. Had the house been growing a smaller bird requiring less cooling, or if the house was equipped with fogging pads or just a simple fogging system the percentage, would have been even lower.

The bottom line is that when you look at the total amount of water used by a broiler house over the course of a year, the amount of water used by the evaporative cooling system is small in proportion to the amount of water consumed by the birds. Obviously without this additional water it would be very difficult to keep birds alive let alone productive during hot weather. When you look at it in terms of what the loss of birds, reduction in feed conversion efficiency, and reduced weight gains resulting in longer growouts would cost the industry, the approximate 20% increase in yearly water usage is a very good investment.

It is also important to keep in mind that a properly maintained evaporative cooling pad system is very environmentally friendly. Significant and necessary cooling is produced through the simple evaporation of water from a paper pad. Essentially no water is wasted, every gallon of water is used to produce cooling. The pads themselves are made of biodegradable paper. When compared with traditional air conditioning systems, it becomes very clear how “green” the evaporative cooling system used broiler houses really are.


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