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Poultry Housing Tips

Lowering House Temperatures Will Typically Not Result in Significant Fuel Savings

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During cold weather, fuel usage is a major factor in determining broiler a farm's profitability. As a result farm managers are often looking for new ways to keep their heating costs to a minimum. Though there are a number well-proven methods of reducing the cost of heating a poultry house (adding insulation, reducing leakage, using litter treatments, and installing circulation fans) one practice sometimes employed, lowering a house's target temperature, will actually have a minimal effect on heating costs and can result reduced bird performance and health.

The primary factor that determines how much it costs to heat a poultry house during cold weather is the difference in the temperature of the air inside and outside the house. The greater the temperature difference, the greater the amount of heat that will be lost through a house's walls and ceiling, as well as through ventilation. The relationship between poultry house heat loss and inside/outside temperature difference is linear. Simply put, if the temperature difference doubles from one day to the next, heating costs will roughly double. For instance, if we have a house where it is 90ºF inside and 60ºF outside (a 30ºF temperature difference) and the next day the outside temperature drops to 30ºF, creating a 60ºF temperature difference, heating costs will roughly double. Conversely, if the next day the outside temperature increases to 75ºF, resulting in a 15ºF temperature difference, heating costs will be roughly cut in half. It is important to note that this relationship assumes that nothing else changes one day to the next (i.e., ventilation rates, wind speed, cloud cover, etc.) other than outside temperature. But if everything is essentially the same from day to day, for any given house, heating costs are essentially determined by the inside/outside temperature difference.

Though there are different opinions as to the optimal house temperature for any given bird age, these differences are relatively minimal when compared to the differences that occur in outside air temperature from day to night as well as from day to day. For instance, someone might believe that chicks should be started at 92ºF, while someone else believes that 89ºF is the ideal

temperature. Though from a chick's perspective a 3°F difference in house temperature can be very significant, from a heating cost standpoint a 3°F difference in inside house temperature really doesn't mean much. For instance, if it is 32°F outside and inside house temperature is 92°F, there is a 62°F temperature difference. If the house temperature is 89°F, there is 59°F temperature difference. In either case, there will be a lot of heat flowing out a house's walls, ceiling, and exhaust fans.

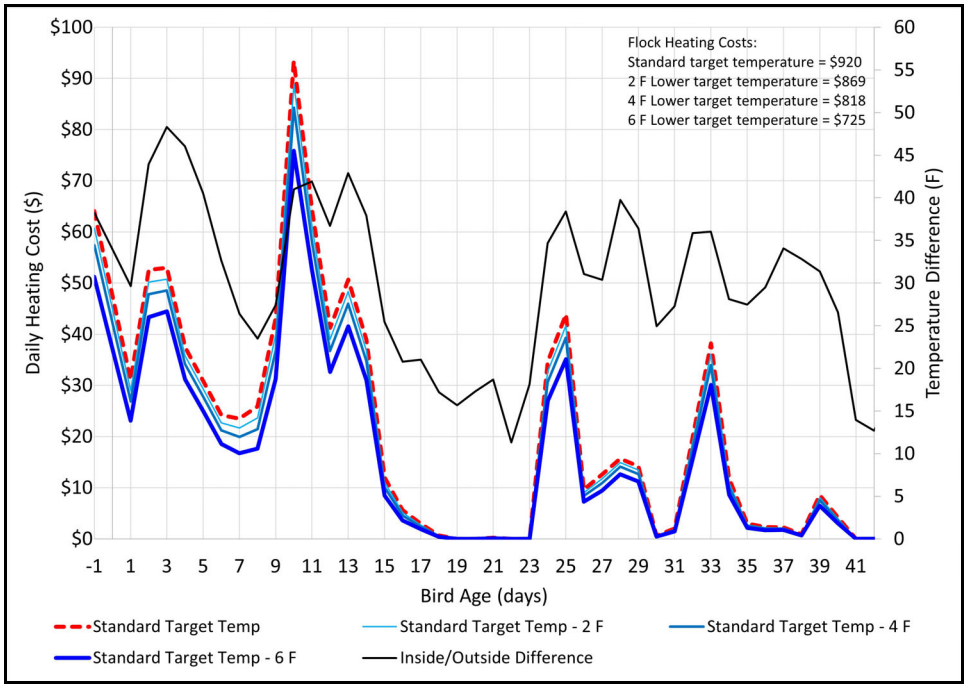

Figure 1. Daily fuel usage and inside/outside temperature difference

Figure 1 illustrates the daily heating cost for a 40' X 500' totally enclosed broiler house in North Georgia over the 42-day December/January flock. The red dashed line shows the cost of heating the house each day (as determined by a natural gas meter) while the solid black line shows the average daily difference between the temperature of air inside the house and air outside the house. The graph clearly illustrates the close relationship between heating costs and temperature difference. Large changes in the inside/outside temperature difference result in large changes in heating costs. Small temperature differences mean lower heating costs; large temperature differences higher heating costs.

In Figure 1 (blue lines) projected daily heating costs are illustrated had the house temperatures 2°F, 4°F, and 6°F lower over the entire the flock. Though lower house target temperatures would have reduced heating cost, the savings would have been minimal. Even if the producer had maintained a six-degree-lower house temperature over the course of the entire flock, the savings would have been only $200. A six-degree-lower target temperature, especially during brooding, would have very likely had a significant negative effect on bird performance, potentially costing the producer far more than the $200 fuel savings.

Heating costs are determined by inside/outside temperature difference which in turn is determined far more by outside temperature than by a house's target temperature. Though lowering house temperature may seem like a good idea, the small reduction in house temperature will likely cost a producer in bird performance more than what it will save in heating costs.

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