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Poultry Housing Tips

Loose Fitting Curtains are Very Costly

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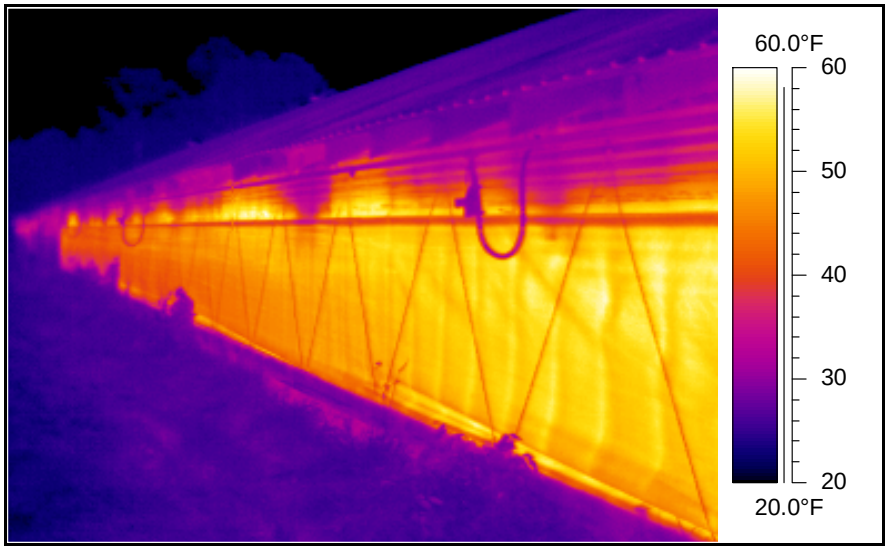

When it comes to keeping heating costs to a minimum, poultry producers must keep in mind that though the amount of side wall and ceiling insulation in a house is important, house tightness is of far greater importance. Think of it this way, the insulation value of a single pane glass window in a dwelling house is next to nothing. Though it would be advantageous to replace a single pane window with a double pane window, the simple fact of the matter is it is far more important to simply keep the window tightly closed during cold weather than it is to replace them. The same fact holds true in a poultry house. Though side wall curtains have a low insulation value and should be replaced with an insulated wall, the first and most important step in keeping heating costs to a minimum is to simply keep side wall curtains closed tightly during cold weather.

For instance, when brooding chicks on a 30°F day approximately 40 Btu's/hr of heat is lost for every square foot of side wall curtain. If the curtain was replaced with an insulated wall, the heat loss would typically drop to less than 5 Btu's/hr per square foot, a decrease of nearly 90%. While this is obviously an impressive decrease in heat loss, it is important to put it in perspective. Approximately 5,000 Btu's/ hr can be lost through a one square foot opening in the side wall under the same conditions if the wind is blowing just one mph! Over 100 times more heat can flow through a one square foot opening in the side wall than will flow through one square foot of curtain material! Though the low insulation value of side wall curtains is a definite problem, the fact remains that loose fitting side wall curtains are a far more potentially costly problem.

Another commonly overlooked aspect of loose fitting side wall curtains is that they can actually result in a greater heat loss from a house when the exhaust fans are off than when they are on. When the exhaust fans come on during

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minimum ventilation loose fitting curtains are typically pulled against the house by the negative pressure created by the fans resulting in a “tighter” house. But, when the fans shut off, side wall curtains often move away from the side of the house resulting in gaps between the curtains and the side walls. The slightest breeze causes cold air to move through the gap between the now loose curtain and the side wall often resulting in surprisingly high “ventilation” rates when the exhaust fans are off. Not only does this result in higher heating costs but can lead to drafty conditions and litter moisture problems.

Figures 1 and 2 are thermal images taken outside of two different curtain-sided poultry houses during cold weather with and without minimum ventilation fans operating. Though the low insulation value of the side wall curtains is apparent by their relatively high exterior surface temperature, the fact that hot air is leaking out from the top of the curtains when the fans are off is also very clear. In both houses when the exhaust fans shut off the side wall curtains hung approximately ½ to 1" from the side wall which amounted to over 50 square feet of opening. If it was 30°F outside and 80°F inside and there was just a two mph breeze blowing, this would have resulted in a heat loss of approximately 300,000 Btu’s or 3.2 gallons of propane each hour. It is important to realize that less than 1.5 gallons worth of heat would be lost “through” side wall curtains each hour in this scenario. Basically, twice the heat would be lost going around the curtains than through them when the exhaust fans are not operating.

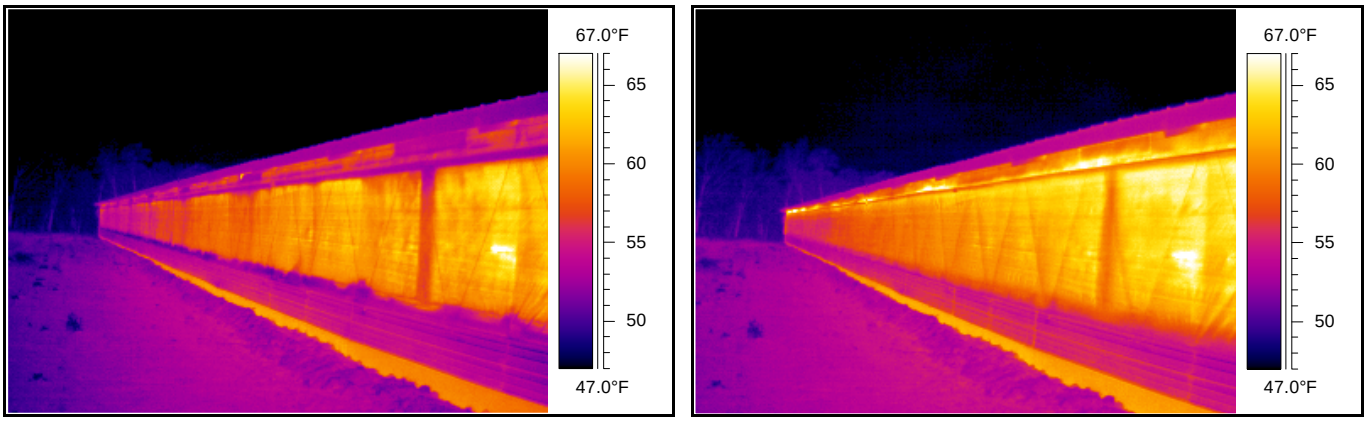

Figure 1. Thermal images of a curtain-sided house with exhaust fans on (left) and off (right).

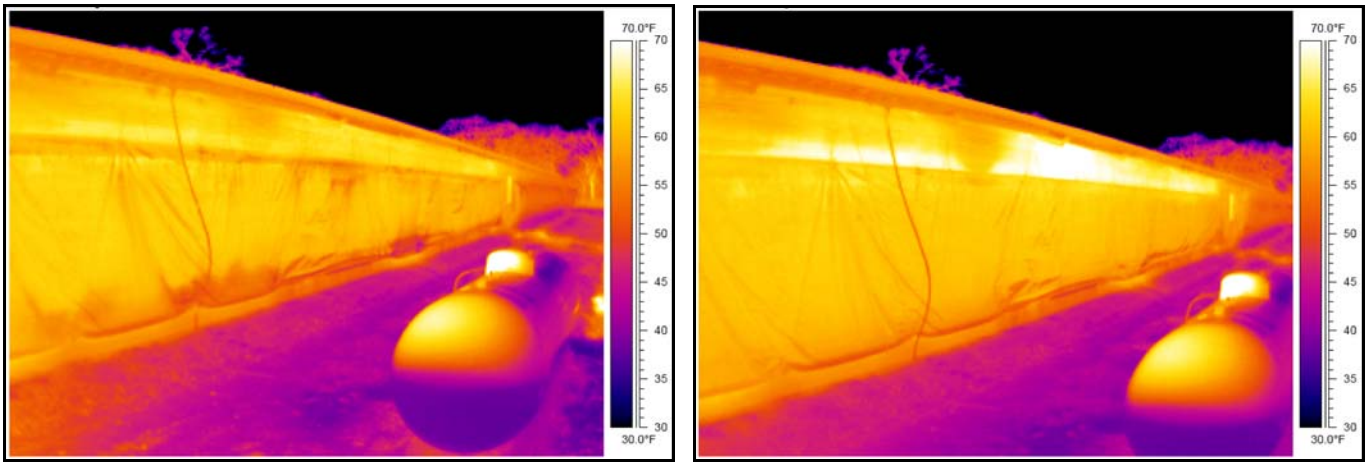

Figure 2. Thermal images of a curtain-sided house with exhaust fans on (left) and off (right)

Though, as stated previously, the best method of reducing the excessive heat loss associated with side wall curtains is to replace them with a properly insulated, totally enclosed wall, there are things short of this a producer can do that will minimize heat loss associated with loose fitting side wall curtains that can often be done at minimal cost:

1) Make sure the top of the side wall curtain overlaps the curtain opening by at least six inches. If there isn’t sufficient curtain overlap consider attaching a 1' strip of curtain material to the top of the curtain opening to increase curtain overlap.

2) Make sure curtain pulleys and strapping are installed within an inch where the top of the side wall curtain sits when closed. This helps to insure that the top of the side wall curtain will be held tightly against the side wall.

3) Make sure there are no metal siding ribs between the curtain pulley and the top curtain rod. A metal rib tends to hold the curtain string approximately one inch off the side wall resulting in a loose fitting curtain.

4) Seal the bottom of the curtain with a wooden strip. The wooden strip not only increases curtain tightness but minimizes the possibility of ice forming between the curtain and the side wall which tends to push the curtain off the side wall decreasing curtain tightness. Make sure the strip is installed right at the bottom of the curtain opening to prevent trash from collecting between the side wall and the curtain.


5) Install a curtain pocket at the top of the curtain opening to help insure the top of the curtain seals tightly (Figure 3 - *Poultry Housing Tips* December, 1996) . Make sure the pocket forms an air tight seal against the side wall. A loose top curtain pocket does little good (Figure 4).


Figure 3. Properly installed curtain pockets with the bottom of the curtain stripped with wood.


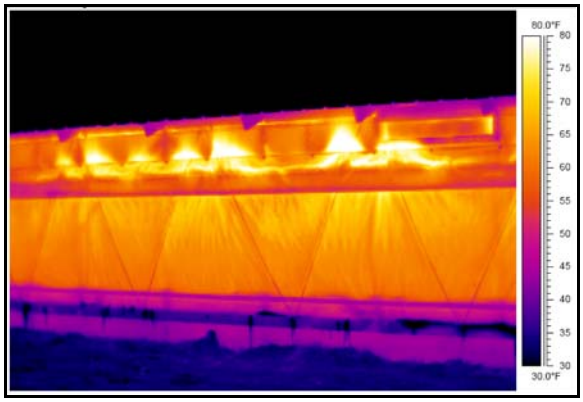

Figure 4. Poorly installed curtain pocket and a thermal image of the same side wall on a cold morning.

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