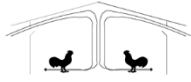




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Poultry Housing Tips

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Fogging Pad Installation

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Fogging-pad cooling systems are becoming a very popular method of reducing heat stress in tunnel-ventilated houses. Poultry growers have found that fogging-pad systems can reduce house air temperature by 10 to 15 degrees, are easy to manage, relatively inexpensive and most importantly keep their houses drier than traditional fogging systems.

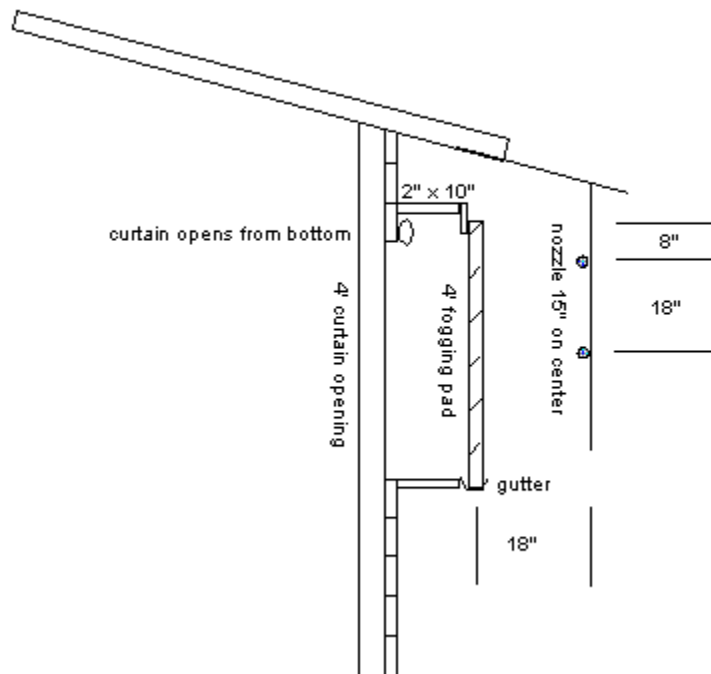


Figure 1. Four-foot pad on a four-foot curtain opening.

As with any new type of equipment, there seems to be little and/or conflicting information on what is the best method of installing fogging-pad systems. Though most methods of installation work very well, some methods appear to work better than others. One method of installing fogging-pads that has shown to have a number of advantages is placing the pad about eight to ten inches away from the side wall with the side wall curtain installed between the pad and the side wall (Figures 1 and 2).

The tunnel curtain is installed in much the same manner as in a traditional tunnel-ventilated house with fogging nozzles. The only exception is that the curtain needs to be double hemmed with a heavy steel pipe in the bottom hem and winched so that it can be rolled up from the bottom. Ideally, the top of the tunnel curtain would also be winched so that it will open or close with the remainder of the side wall curtain.

The box supporting the fogging pads can be constructed out of 2" X 10" lumber or plywood supported from the truss and/or side wall occasionally. If the house has side-wall inlets, they should be placed above the pad enclosure. If a fiber pad is used, the box frame should be covered with poultry netting to support the pad.

The following are some of the advantages of installing the pads eight to ten inches off the side wall:

1) *Pad life will be increased because the tunnel curtain is not dragging across the pad surface whenever the curtain is opened or closed.*

One of the most common questions about fogging pads is, "How long will they last?". No one really knows, but it has been observed that when the curtain is raised and lowered over the pad a number of times over a prolonged period of time the pad begins to show signs of wear.

2) *Rodents are discouraged from nesting in the pads during the winter months because the pads are located outside the house where temperatures are cold.*

Rodent damage is a common problem for producers with conventional cool cell pads. When the pad is on the inside of the curtain it stays warm. Rodents like to nest in the warm pad destroying it in the process. If curtains do not roll up over the pads, the pads are kept cold and rodent damage is decreased.

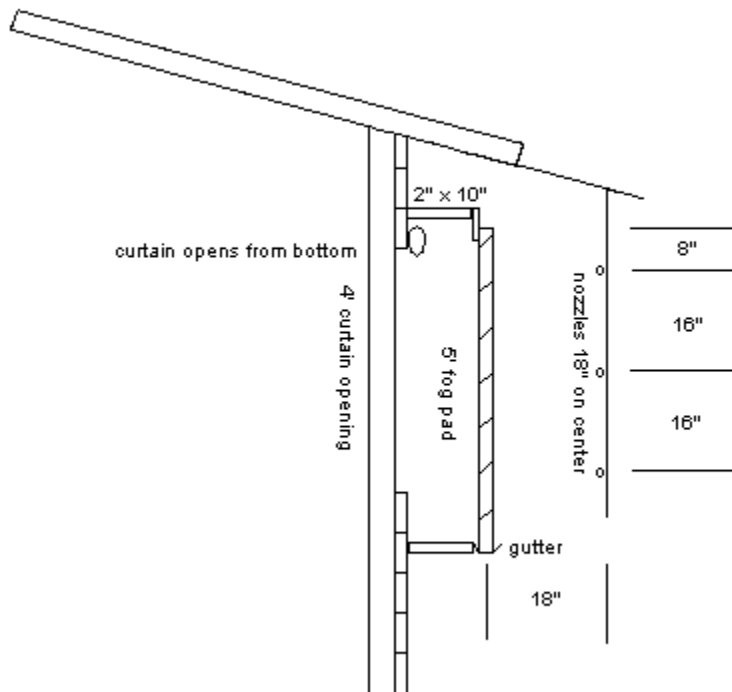


Figure 2. Five-foot pad on a four-foot curtain opening.

3) The eight to ten inch gap between the pad and the side wall minimizes the likelihood of water entering the house.

When the pad is placed directly against the side wall screen, water on the inside surface of the pad can collect on the side wall screen and then run down the side wall resulting in possible water damage to the sidewall and litter caking. Though this problem can be somewhat limited by moving the pad an inch or two off the side wall, the eight to ten inch distance virtually eliminates the possibility of any water on the pad entering the house.

4) The side wall curtain on the outside of the house protects the pad from rocks and large pieces of wood thrown by the shavings truck.

In houses with the pad installed directly against the side wall, a second curtain is needed on the inside of the house to protect the pad from the shavings truck. Rocks thrown from the truck can damage the pad, and small pieces of wood can clog the pad. This is of added importance when using fiber pads because shavings are more likely to become imbedded in the pad.

5) The gap between the pad and the side wall enables a producer to place a five-foot pad on a four-foot curtain opening or a six-foot pad on a five-foot curtain opening, thereby reducing installation cost as well as improving air flow.

The amount of pad a poultry house requires is based on the number of exhaust fans (i.e., 60 ft² per fan for two inch cool cell pads, 75 ft²/fan for two inch fiber pads) . As a result, if you install a short pad (four foot), the fogging pad area will have to be longer than if a taller pad (five foot) is installed. For instance 60 feet (each side wall) of four-foot cool cell type fogging pad is required in a tunnel-ventilated house with eight fans, whereas only 48 feet of five-foot pad is required. In both instances, the total amount of pad area is the same.

By moving the pad off the side wall, the air from a larger pad can be drawn through a smaller opening without significantly affecting fan performance. The shorter length of pad reduces installation cost especially in existing houses because the existing tunnel curtain opening does not need to be changed in most cases.

In a conventional tunnel-ventilated house with fogging nozzles, approximately 40 to 50 square feet of tunnel inlet opening is typically provided per 48" fan. With this amount of opening and all the fans operating, air will enter the house at an air speed of 400 to 500 ft./min., providing adequate air movement in the vicinity of the tunnel opening.

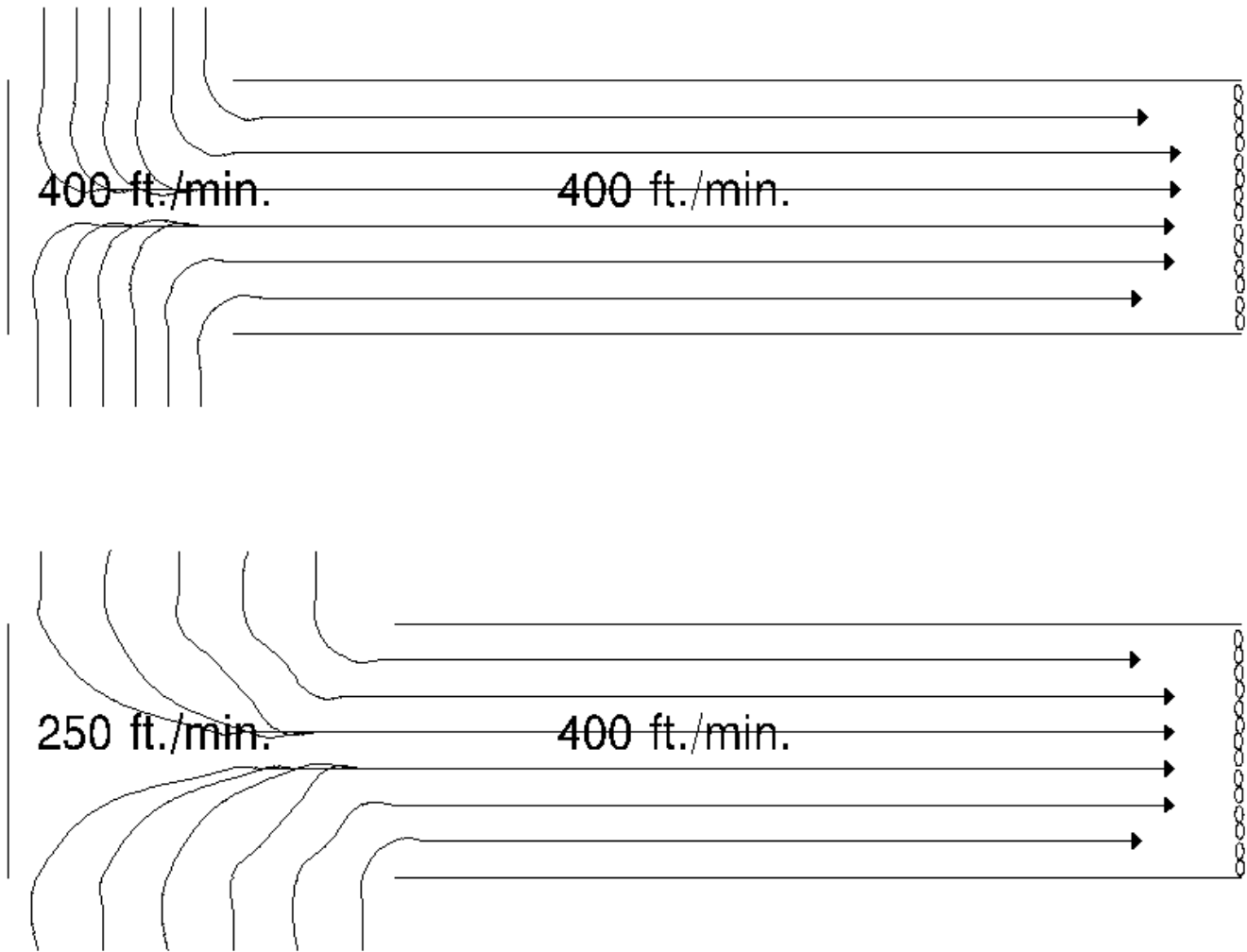


Figure 3. Tunnel ventilation inlet air flow patterns.

In fogging-pad houses, more pad inlet area is required because it is harder to pull air through a pad than through an open side wall. In fact, it's about two to four times harder to pull air through a pad than through an open curtain. As a result, more pad inlet area is required to maximize fan performance than what is traditionally used in tunnel-ventilated houses using fogging nozzles.

For a two inch cool cell type of pad material 60 square feet of inlet opening is required per 48" fan. The total pad area for the typical 500 ft. broiler house would be approximately 480 square feet, compared to 360 square feet of curtain opening for the average tunnel-ventilated house with fogging nozzles. The additional amount of opening results in the air speed through the pad of approximately 350 ft./min. The larger the opening the slower the speed of the air entering the opening (see Wind Speed in Tunnel-Ventilated Houses; April, 1994). For a two inch fiber pad approximately 70 to 75 square feet of pad is required per 48" fan (600 square feet of pad in the average 500 foot broiler house) resulting in the air speed through the pad of approximately 250 ft./min.

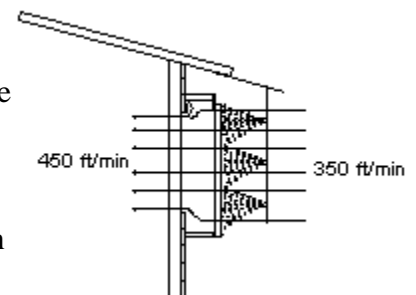


Figure 4. Air speed increase

The relative low air velocity of the air entering the house may result in a dead spot near the inlet end wall leading to decreased bird performance and the increased likelihood of mortality problems in this area (Figure 3).

By placing a five-foot pad eight to ten inches away from a four foot side wall opening, the air entering through the pad is drawn through a smaller side wall opening, thereby, increasing the speed of the air entering the house by about 20 percent. This slight increase in air speed minimizes the size of the dead spot (Figure 4).

6) With four-foot pads the gap between the curtain and the side wall allows the side wall curtain to be closed 8 to 12 inches, thereby increasing the speed of air entering the house maximizing air movement in the inlet end of the house.

By closing the tunnel curtain a little, the speed of the air will be increased much like installing a five-foot pad on a four-foot opening. If the curtain was directly on top of the pad, the curtain could not be closed without reducing pad area available to the fans. If pad area is reduced, the static pressure will increase and fan performance will decrease.

7) Tunnel curtain length and winching may not have to be changed when installing a fogging-pad system.

Since many houses already have 40 to 50 feet of tunnel-curtain opening it is possible for some growers to install a fogging-pad without having to modify their tunnel curtain and/or side wall. The fogging-pad frame would be installed around the existing curtain opening.

Though moving the pad off the side wall has a number of advantages it will cost the grower a little more to install. The additional lumber and labor may add \$300 to \$500 to the cost of the system. But, in the long run you may find it is better to spend a little more money up front and save yourself some headaches in the future.

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