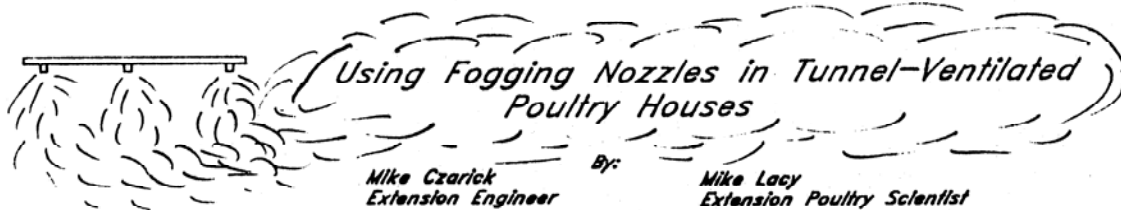




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Traditionally, we have had to think of fogging nozzles as our last line of defense in fighting heat stress during the warm summer months. When all else fails, turn them all on and hope for the best. This is due to a number of different reasons. First, since fogging nozzles put out relatively large water droplets, a large amount of air movement is required to keep droplets suspended. If all the circulation fans are not operating, the lack of air movement results in a significant portion of the water being used to wet the floor, instead of cooling the air. Secondly, if only a portion of the nozzles are used, only those birds near the fogging nozzles which are turned on would receive any cooling. Finally, since the cooling capacity of these systems is fairly limited, most producers want to save them for use on only the hottest of days.

As with many other traditional management practices, tunnel ventilation may require us to reexamine how we operate our fogging systems. Unlike traditional curtain-sided houses, tunnel-ventilated houses provide uniform air movement throughout the house. This uniform air movement allows producers to nearly triple the amount of water than can be added to the hose without producing litter wetting problems. With the increased potential for cooling comes an increase in the number of ways the fogging system can be operated.

In a tunnel-ventilated house a significant level of air movement can be produced without running all the fans. For instance, four 48" fans can produce an air velocity of nearly 300 feet per minute (this is more air movement than you would typically get in a 400' house with 10 mixing fans). This level of air movement provides sufficient air movement to keep water droplets suspended long enough to facilitate evaporation.

A second important difference is the arrangement of fogging nozzles in a tunnel-ventilated poultry house. Because fogging lines typically run across the house instead of lengthwise, it is fairly easy to vary the amount of water used for cooling. Through the use of cut-off valves, located throughout the house, water can be supplied to any number of individual lines increasing the amount of flexibility. Since the air moves down the house, any moisture added to the air will provide relief for any bird downwind of the nozzles.

PUTTING KNOWLEDGE TO WORK

The result of these differences is that it is possible to use fogging nozzles in tunnel-ventilated houses not only to produce cooling for seven week old birds when it is 100°F outside, but also to temper the air just a few degrees whenever it is needed.

Example 1

Bird age	4 weeks
Daily high temperature	85°F
Desired inside temperature	70°F

Though this would not be considered a heat stress situation, production would probably be affected if no cooling were provided. You could turn all the fans on and go to full tunnel ventilation. This would produce a 15°F or so "wind chill" effect and the birds would be sufficiently cooled. But, this would require a significant increase in electricity usage and could lead to excessively dry litter. Another option is to use a portion of the fogging nozzles. Three or four of the 48" fans could be used in conjunction with 1/3 to 1/2 of the fogging nozzles. The fans would exchange the air as well as produce a slight wind chill effect (about 5°F to 10°F) and the foggers would drop the air temperature an additional 5°F.

It is important to realize that just because you are only using a portion of the fogging nozzles, that doesn't necessarily mean that you won't be producing significant amounts of cooling. Since you are only using half of your fans, only half the amount of water is needed to produce approximately the same amount of cooling. As a result, you may use less than half of your fogging nozzles at times on younger birds and produce the desired cooling effect.

Example 2

Bird age	6 weeks
Daily high temperature	95°F
Desired inside temperature	70°F

This would be regarded as a probable heat stress situation. The most popular method of running the ventilation system would be to have all the fans come on and then run all of the foggers. Though this would provide the desired amount of cooling effect, there are other ways which would produce cooling and reduce electricity usage at the same time. In the morning half of the fans could be run with 1/2 to 1/3 of the fogging nozzles. As the day progressed and more cooling was desired, more fans could be turned on with the remainder of the fogging nozzles.

This method of operation would delay the use of the remainder of the 48" fans by producing cooling through the use of fogging nozzles instead of with air movement. This could significantly reduce the time during the day you would be running all of your exhaust fans and save the biggest cooling effect for when it is really needed.