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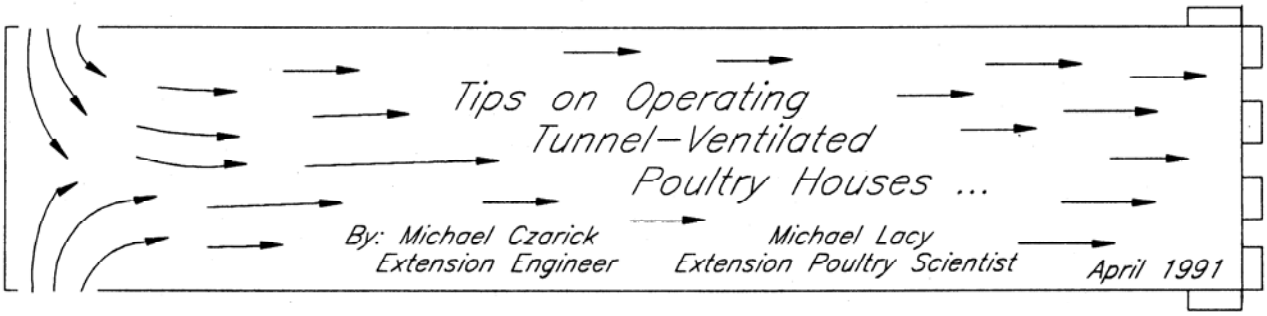

Operating a tunnel-ventilated poultry house can be a real challenge. There seems to be an endless list of decisions that have to be made: When to start tunnel ventilating? How many fans to use? When to use pads or foggers? When to use natural ventilation? How to stop bird migration? If this isn't bad enough, many of these questions don't have any firm answers. Why? Because tunnel ventilation is still a fairly new concept.

We probably won't have the definitive answers to many of these questions for a number of years. In the meantime, listed below are a few things that are known about tunnel ventilation. The list includes things to avoid, methods of increasing ventilation system efficiency, as well as things to consider when making management changes.

1) Do not use sidewall exhaust fans when tunnel ventilating. They have little effect on reducing house temperature or increasing air movement. The only sidewall exhaust fans you can consider using are those in the back half of the house.

2) All servicemen and producers with tunnel-ventilated houses should have access to an air velocity meter. With all the fans operating, air velocity in the center of the house should be at least 350 feet per minute (4 mph) to achieve the desired cooling effect. If it is less than this, tighten or replace fan belts, clean shutters, and check to see if there is enough opening in the front of the house. If the velocity is still too low, you may want to consider adding air deflectors. Air deflectors are pieces of curtain material that are attached to the ceiling and hang down to the top of the sidewall, sort of like a short half house brooding curtain. The deflectors move air off the ceiling and down to the floor. This increases air speed at little or no cost to the producer. To insure that the air stays near the ground, air deflectors should be placed every 40 to 60 feet.

3) Do not cover exhaust fans with chicken wire. It is more desirable to use 1" X 2" or 2" X 4" welded wire fencing because it won't collect feathers as quickly and is easier to clean.

4) If there is even a possibility of tunnel ventilating during a growout, migration fences should be put up as soon as the birds are spread evenly throughout the house. Fences can be constructed of 2" X 4" welded wire fence connected to a 1" PVC frame.

PUTTING KNOWLEDGE TO WORK

Construct the frame in sections for easy storage and handling. The height of the fence doesn't need to exceed 18". Ideally, fences should be placed every 100 feet.

5) Clean fan shutters. Moisture and dust accumulate rapidly on exhaust fans decreasing their air moving capacity by 30 percent or more. A 30 percent reduction in air moving capacity would force a grower to run eight exhaust fans to move the air that six clean fans would normally move.

6) Make sure exhaust fan belts are tight. Loose belts can have more of an adverse effect on air movement than dirty shutters, often decreasing fan capacity by 40 percent or more. To be on the safe side replace all the belts on the exhaust fans once a year.

7) It is about three times easier for a fan to pull air through a hole in a wall than through an evaporative cooling pad. So make sure all holes are filled to maximize the amount of cool air that is brought in through the pads.

8) Make sure that their is adequate curtain overlap on the sidewalls. Ideally you should have three to four inches of overlap. Air leakage around the curtains increases house temperature and decreases air movement within the house.

9) Patch holes in the ceiling. Exhaust fans will pull hot air (140°F) from the attic space when tunnel ventilating if given the opportunity. If you have an open ceiling house make sure that ridge ventilators are closed tight.

10) Make sure that you have enough curtain opening or pad area. If you don't have enough opening, the amount of air the exhaust fans move will be decreased by 20 percent or more. For a pad house you need 80 ft^2 of (4") pad per 48" fan. In a tunnel-ventilated house without pads, 40 ft^2 of inlet opening per 48" fan is required.

11) In a tunnel-ventilated house with fogging nozzles, the rear of the house should be cooler than the front or middle of the house. If it is not, add more fogging nozzles.

12) To increase cooling efficiency install a 200 psi booster pump. The increased water pressure decreases droplet size and increases the amount of fog produced by 50 percent. The use of one gallon per hour, stainless steel nozzles will produce the finest fog and minimize clogging problems.

13) Experiment with your fogging nozzles. Do not think of them as a last ditch effort to save birds, think of them as a way to increase production efficiency by making the birds more comfortable. Vary the number of nozzles you use as well as the number of fans you run with them. You may want to consider starting with four 48" fans with 1/3 to 1/2 of your nozzles with younger birds. Experiment with turning nozzles on in different locations in the house. With tunnel ventilation, fogging nozzles are not necessarily an all or nothing system.

14) Protect fan and fogger thermostats from moisture if you are using a fogging system. If thermostats get even slightly moist, they will shut off fans and/or pumps prematurely. Placing thermostats inside an upside-down five gallon bucket works well.

15) Do not place fogging nozzles any closer than 80 feet from the exhaust fans. Fog emitted from nozzles any closer will produce little cooling effect and will cause rapid accumulation of dust on exhaust fan shutters.

16) In addition to a thermostat, fogging and evaporative cooling pad pumps should be placed on a 24 hour timer. Adjust the timer so that water cannot be added to the house between the hours of 9 pm and 10 am. During these hours outside humidity is too high for water to evaporate so pads or foggers do little if any cooling.

17) To make thermostat adjustments easier, you may want to consider turning on two exhaust fans at a time. For example, two fan thermostats could be set at 70°F, two at 74°F, two at 78°F, and two more at 80°F. Foggers could then be set to come on at 85°F.

18) Do not tunnel ventilate a house with fewer than three 48" fans. If it is too cold to run three 48" fans, it is too cold to be tunnel ventilating. The only exception is on smaller birds, less than three to four weeks of age.

19) Be careful in switching from tunnel to natural ventilation. The birds in a tunnel-ventilated house have been acclimated to a much lower temperature than birds in a naturally-ventilated house and are, therefore, more susceptible to heat stress. A nighttime temperature of 75°F may not be stressful to a bird in a naturally-ventilated house, but can be to a bird that has been raised in a tunnel-ventilated house. In most cases it is advisable to continue tunnel ventilating at night to be sure birds are sufficiently cooled. In general, if temperatures are dropping to 65°F or below at night, then going to natural ventilation at night is permissible.

20) Place high/low thermometers in the front, middle, and rear of the house and record daytime and nighttime highs and lows. Watch for large temperature differentials between the front and rear. If the difference occurs during the day, turn on more fans. If you are using fogging nozzles, increase the number you have in the house. If a large temperature difference occurs during the night, increase the number of fans you are running at night. If it is too cool at night to do this, then go to natural ventilation or sidewall inlets if you have them.

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