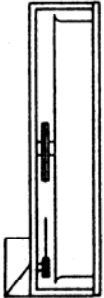




The University of Georgia Cooperative Extension Service

College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356



SMOKE EMITTERS

BY: MICHAEL CZARICK MICHAEL LACY
EXTENSION ENGINEER EXTENSION POULTRY SCIENTIST OCTOBER 1990

Ventilation systems are becoming more and more complicated all the time. Controlling the environment is no longer just a matter of raising the curtains when it gets cold and turning on a few circulation fans when it gets warm. It now involves many complex decisions. Think of the number of decisions a producer has to make: When to use sidewall inlets? How much should they be opened? Which inlets in the house should he use? How many exhaust fans should he use? Should he use circulation fans? How long should they run? And these are just for cold weather ventilation. Throw on top of this when and how to use natural ventilation, tunnel ventilation and foggers; it's no wonder many producers as well as servicemen are confused.

What people typically ask for is a chart showing exactly how they should run their ventilation system for any given bird age under any given outside condition. The problem with this is that there are so many factors that go into making these decisions (i.e., bird age, outside temperature and humidity, wind direction and speed, house construction) that a chart that would handle all possible combinations would be so large and complex that it would be useless.

Whether you are using negative pressure, positive pressure, tunnel ventilation, or natural ventilation, the key to controlling your house environment is not being told what to do, but to understand how your particular ventilation systems operates. Once you understand how your ventilation system operates, you will know how to provide the proper environment regardless of bird age and outside conditions.

The only way anybody can get a true feel for the ventilation system is to see it operate. One of the best ways to see a ventilation system operate is by the use of smoke emitters. Smoke emitters come in a variety of sizes and colors (colored smoke emitters are very expensive). Emitters are classified by how long they burn and the volume of smoke they emit. They come as small as 30 seconds/low volume or as large as 3 minute/large volume. The short duration/low volume smoke emitters can be used with birds in the house. The large volume emitters produce so much smoke you won't be able to see 5 feet in front of you and as a result should only be used in empty houses.

PUTTING KNOWLEDGE TO WORK

The University of Georgia and Ft. Valley State College, the U.S. Department of Agriculture and counties of the state cooperating.

The Cooperative Extension Service offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, sex or disability.
An equal opportunity/affirmative action organization committed to a diverse work force.

The long duration/large volume smoke emitters can be used to evaluate the tightness of a house. With the curtains raised, turn a few sidewall fans on, then proceed to walk around the house with a lit smoke emitter. You will be surprised how much leakage exists even in your tightest houses.

The long duration/large volume smoke emitters are also useful in showing air patterns in tunnel-ventilated houses. The emitter can be placed outside the house to allow smoke to be drawn in through the pads or the curtain opening in the front of the house. Look for dead spots. Is there more air movement near the ceiling, sidewalls, one side versus another?

The same size emitters can be used in curtain-sided house with mixing fans. Place an emitter in front of a circulation fan. Is there adequate air movement next to sidewalls? Tilt the fan toward the ceiling. How does the distribution change?

The short duration/small volume smoke emitters can be used in the winter months to show how air enters the house. Place an emitter next to an inlet or curtain crack and turn on a fan or two. How does the air enter the house? Does it move toward the ceiling or down toward the floor? Reduce the inlet opening and note changes.

Place an emitter above a brooder or near a forced air heater. Note how fast the hot air moves toward the ceiling. Turn on a couple of mixing fans. How long does it take to mix the air?

Smoke emitters will allow you to experiment with your ventilation system. Try running different numbers of fans, adjusting inlet openings, using inlets on different sides of the house, adjusting sidewall curtains, etc. You will be surprised what you will learn in just a couple of hours.

Listed below are some places where you can obtain smoke emitters. Buy enough that you can keep a few on hand to check things from time to time.

High Volume

Superior Signal Company*
P.O. Box 96
Spotswood NJ 03884
(908) 251-0800

Low Volume

Mitchell Instrument*
14 Timber Ridge Drive
Annandale NJ 08801-9670
(619) 744-2690

<u>Type</u>	<u>Cost (approx.)</u>
30 sec/4,000 ft ³	\$21 per dozen
1 min/8,000 ft ³	\$23 per dozen
3 min/40,000 ft ³	\$40 per dozen

<u>Type</u>	<u>Cost (approx.)</u>
1 min/150 ft ³	\$12 set of 10
1.3 min/600 ft ³	\$16 set of 10
4 min/1060 ft ³	\$16 set of 10

*Trade and brand names are used only for information. The Cooperative Extension Service, University of Georgia College of Agriculture does not guarantee or warrant published standards on any product mentioned; neither does the use of a trade or brand name imply approval of any product to the exclusion of others which may also be suitable.