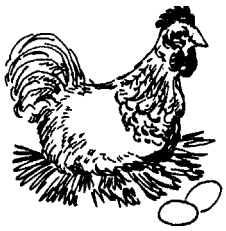
The University of Georgia
Cooperative Extension Service
College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356

JANUARY 2005



COMMERCIAL EGG TIP . . .

TIS THE SEASON FOR AMMONIA, ...IN HIGH-RISE LAYER HOUSES

The cold weather of winter creates challenges for management of commercial layer houses entirely different from those of summer. Ventilation rates must be reduced to minimize heat loss and preserve appropriate temperatures in the living space of the birds. Unfortunately, the reduced rate of air flow through a high-rise layer house slows removal of ammonia and can result in elevation of ammonia to undesirable levels. Water vapor produced by the hens is also exhausted more slowly, creating a more humid environment that reduces drying of manure in the storage area. Moist manure tends to produce more ammonia than dry manure. High concentrations of ammonia are aversive to chickens and can cause damage to sensitive tissues, such as in the eye. The United Egg Producers Animal Husbandry Guidelines for U.S. Egg Laying Flocks state that ammonia level should be less than 25 ppm and should not exceed 50 ppm.

What can be done to minimize the buildup of ammonia in high-rise layer houses during winter? First, the house should be appropriately insulated. Good insulation minimizes heat loss from the house and allows a higher ventilation rate without compromising the interior thermal environment. Houses with solid sidewalls are able to provide better insulation than curtain-sided houses because curtains have low insulation value and are also prone to air leaks.

Once a high-rise layer house is in operation, preservation of its ability to maintain low interior ammonia levels during winter is a matter of preventive maintenance. A good rodent and insect control program is essential year-round. Vermin can burrow into insulation and destroy it over time. Openings which allow air to leak into the building should be covered, repaired, or blocked. These include tunnel inlets, fan louvers, gaps around or holes in curtains, poorly fitting doors in entrances to the manure storage area, etc. Air leaks can lower house temperature and cause inappropriate reduction of fan operation, thereby slowing removal of ammonia and moisture. They can also compromise fresh air distribution through the house inlets and create zones where ammonia rises to excessive levels. Warping or uneven adjustment of air inlets can also cause dead zones where

ammonia can accumulate. Drinker systems should be maintained to prevent water leakage. The manure storage area of the house should be inspected on a regular basis to verify that defective drinkers are not putting excess water into the manure. Finally, the air in various locations within a house should be tested periodically using an accurate ammonia meter to verify that ammonia levels are not too high. The human nose becomes insensitive to ammonia with repeated and prolonged exposure and cannot be trusted to properly assess ammonia concentration.

Summary of points to minimize ammonia in a high-rise layer house during winter:

- Have good house insulation to enable optimal ventilation rate.
  - Need appropriate insulation design specification for the house.
  - Control rodents and burrowing insects year round to prevent degradation of insulation materials.
  - Cover or block openings to reduce air leakage.
- Adjust/repair air inlets to promote uniform air distribution.
- Minimize water leaks from drinkers.
  - Inspect manure storage area regularly and fix leaking drinkers.
- Use an ammonia meter to test ammonia levels in the house.
  - Don't use your nose.

A. Bruce Webster
Extension Poultry Scientist

Extension County Coordinator/Agent

Consult with your poultry company representative before making management changes.

"Your local County Extension Agent is a source of more information on this subject"