

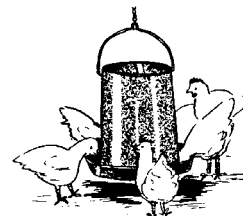


The University of Georgia

Cooperative Extension Service

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

NOVEMBER 2003



BACKYARD FLOCK TIP . . .

MAKE SURE AMMONIA LEVELS DO NOT HARM YOUR FLOCK THIS WINTER

As the weather gets cooler, many people confine their birds to buildings where extreme temperatures can be avoided. While this is good for bird health and performance, it can lead to other problems if the environment is not managed properly. In efforts to keep their birds warm, some people have constructed backyard housing that is insulated and fairly air tight. This means that the houses have fewer leaks so less fresh air comes in and less air laden with ammonia and moisture leaks out. It is important to understand how ammonia is produced, how it affects the bird and how to prevent or control it.

Ammonia

Ammonia is a gas that is produced when the uric acid in fecal droppings is metabolized by bacteria in the litter. The uric acid is broken down and ammonia is formed as a by-product. Three factors that contribute to ammonia production are: 1) manure, 2) heat, 3) moisture. The biggest problem for poultry owners is moisture. It is critical that poultry housing be kept dry and any water spills cleaned up as soon as possible. The moisture levels in poultry housing can be monitored by measuring relative humidity (RH). The RH indicates how much water is in the air. Warmer air will hold more water than cooler air. Humidity sensors used to measure RH and can be purchased at stores such as Walmart, Target, or Radio Shack. By keeping the RH around 50-70%, a poultry owner can maintain good air quality in the coop. If wet litter is present then ammonia issues are sure to be around the corner.

Ammonia Effect on Birds

What effects does ammonia have on birds? Both concentration and exposure time can influence the effect of ammonia. Exposure of poultry to high ammonia levels irritates the respiratory system. Ammonia poisoning symptoms include coughing, snicking, conjunctivitis, and dyspnea (labored or difficult breathing). Feed consumption has been shown to decrease during exposure to high levels of ammonia, and in conjunction with heat stress has resulted in poor feed efficiency. Ammonia

PUTTING KNOWLEDGE TO WORK

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concentration is measured in parts per million (ppm). It has been suggested that ammonia should not exceed 25 ppm in coops. However, prolonged exposure to levels as low as 20 ppm can be detrimental to bird health and performance as poultry can remain in this environment for long periods of time.

Measuring Ammonia

How does a person know if their birds are being exposed to high ammonia? The answer to this question may seem simple; just go into the poultry house and smell. This is a good method of because people can usually smell ammonia when it reaches a concentration of 20-25 ppm. This means if you smell it, then you have a problem and should take corrective steps to get the situation under control.

Alternately, there are several products available to detect ammonia that range from \$20 to \$2,000. The method of measuring ammonia will depend on the situation and value of the birds. Poultry owners that have several thousand dollars invested in their operations might want to have more accurate measurements. The simplest and cheapest method is the use of *Hydrion ammonia test paper*. A small piece of paper is moistened with distilled water and exposed to the air for 15 seconds. As chemicals in the paper react with ammonia in the air, the paper changes color and is then compared to a color chart that indicates approximate ammonia level. The Hydrion ammonia test paper runs about six dollars per roll. A second method is the use of *gas detection tubes*. Air is drawn through a reaction tube by a hand-operated piston pump. Chemicals in the tube react with ammonia in the incoming air causing a measured color change. The hand pump can cost \$165-\$300 and the tubes are \$25-\$35 per box of 10 tubes. A disadvantage of these two methods is that they take only spot measurements of air quality. Ammonia may be high at a time when the owner is not present to take measurements and result in poor air quality and bird performance. *Passive dosimeter tubes* (a box of 10-single use tubes is \$60) are a third method of quantifying ammonia concentrations. These tubes allow ammonia to be measured over a long period of time. One end of the tube is broken off and the tube is placed in the coop for up to 10 hours. The graduated scale on the tube is the ppm. The reading is then divided by the number of hours the tube was exposed to coop air providing a time-weighted (average) ammonia concentration. These tubes do not require a pump which is one less expense and they give the owner an idea of ammonia concentration over a wide range of time.

Summary

The key to controlling ammonia is regulating moisture inside the coop. It may be that a small fan is needed to circulate air to help dry out the litter. Venting the air, while making it difficult to maintain adequate temperatures, will help to remove ammonia and help to regulate the moisture in the coop. If you suspect that ammonia is a problem and need further help, contact your local county agent for additional information.

REFERENCES

Czarick, M. and B. D. Fairchild, 2002. Measuring ammonia levels in Poultry Houses. Poultry Housing Tips, www.poultryventilation.com, Volume 14, No. 8.


Brian D. Fairchild

Extension Poultry Scientist

Extension County Coordinator/Agent


Michael Czarick

Biological Ag. Engineering