North Carolina Cooperative Extension Service

NC STATE UNIVERSITY

North Carolina Poultry Industry Newsletter

Department of Poultry Science
234 D Scott Hall, Box 7608, NCSU
Raleigh, NC 27695-7608
Telephone: 919-515-5407
Fax: 919-515-7070
Website: http://www.ncsupoultry.com

Issue Editor: Jody Smith

Vol. III, Issue I Winter, 2006

.

Poultry Litter Amendments

James Parsons, Area Specialized Agent, Poultry

Ammonia produced in poultry houses can degrade bird health and performance. When broilers and turkeys are raised on litter, amendments can be used to reduce ammonia levels in the house which could improve bird health and performance. Using amendments may also have other economic and environmental benefits. Reduction in ammonia loss increases the nutrient value of the litter while improving air quality. Litter amendments may also reduce energy costs by reducing ventilation needs. Some litter amendments reduce pathogen and pest levels in the house. One litter amendment (alum) has been shown to improve water quality by reducing soluble phosphorus (P) and heavy metal losses in runoff.

While many litter amendments are commercially available, few have been evaluated and found to be effective in controlled studies. In addition to providing general information on various types of amendments, this article highlights two products that have been found to be effective in scientific studies.

There are five types of litter amendments for managing ammonia: acidifiers, alkaline materials, adsorbers, inhibitors, and microbial treatments. The most commonly used litter amendments are acidifiers and alkaline materials. They are briefly discussed below.

(continued page2)

Preventing Avian Flu

Donna Carver, Associate Professor of Poultry Science and Extension Veterinarian

Avian influenza (AI) is a highly contagious disease of birds which can be devastating for poultry growers, both backyard and commercial. AI is caused by a virus which occurs commonly in healthy waterfowl, but can cause severe disease in turkeys and chickens. AI is considered a Foreign Animal Disease (FAD) in the United States (US), which means that the government (both State and Federal) work to prevent the introduction of AI into commercial and backyard poultry flocks. Flocks that are confirmed positive for AI are depopulated and buried onsite. Sometimes growers are paid for depopulated birds, but it may be a portion of the true value of the birds, and can result in severe economic loss for owners and producers of the diseased poultry flocks.

Because of the structure of the commercial poultry industry and the different events which many non-commercial or hobbyist poultry people attend, there is considerable movement of poultry and

(continued page 3)

This Issue Includes:

(continued from page 1)

Poultry Litter Amendments

1. Acidifiers create acidic conditions (pH less than 7) in the litter resulting in more of the ammoniacal nitrogen being retained as ammonium rather than ammonia. Further, the acidity creates unfavorable conditions for bacteria and enzymes that are involved in the formation of ammonia resulting in reduced ammonia production. Many different types of acidifiers such as alum, sodium bisulfate, ferrous sulfate, and phosphoric acid were found to be effective in controlled studies. However, some acidifiers are not recommended for use in poultry houses for reasons such as bird toxicity (ferrous sulfate) or increased phosphorus levels in the already phosphorus rich litter (phosphoric acid). The most commonly used types of acidifiers are Al+Clear (alum), Poultry Guard, and Poultry Litter Treatment (PLT).

2. Alkaline materials such as agricultural lime, hydrated or slaked lime, or burnt lime increase the litter alkalinity (pH greater than 7), and convert more of the ammonium into ammonia gas. The amount of ammonia produced is governed by the litter pH which will depend on the amount and selection of the material. Combining ventilation and heating with application of alkaline material between flocks can result in venting of large amounts of ammonia thus lowering ammonia levels when the chicks or poults are placed in the house. Adding alkaline material may also reduce soluble phosphorus levels in the litter. However, using alkaline materials as litter amendments results in the release of ammonia into the atmosphere that not only reduces the fertilizer value of the litter but may also have a negative impact on the environment. In addition, if the alkaline material is not completely used up during the layout period (between flocks), ammonia levels in the house may be increased when fresh manure is added to the litter.

When using any of these litter amendments, be sure to follow your integrator guides and label directions on the package. The following statements summarize litter amendments.

- High ammonia levels in the poultry house can reduce bird performance and health, reducing profits to the grower and integrator.
- Acidifiers are the most widely used type of litter amendment.
- Using amendments after each flock can reduce ammonia levels in the house and may also reduce energy by reducing ventilation needs in the winter.
- A suitable amendment may also provide other benefits to the grower such as reduced pathogen and pest levels in the house.
- When litter is treated with alum, the potential of phosphorus and soluble metal losses in runoff are reduced which is beneficial for water quality.
- Amendments that reduce ammonia levels by converting ammonia to ammonium may reduce ammonia emissions which can otherwise impact public health and environment. Reducing ammonia losses will also improve the fertilizer value of the litter. Odor complaints from neighbors may also be reduced.
- The grower or applicator should follow the instructions provided by the manufacturer or supplier on how and when to apply the amendment to make sure that the material is fully-activated and effective. Different amendments may require different application or activation methods to ensure full effectiveness.
- While applying amendments, the grower or applicator should, at a minimum, wear protective gloves, long pants, long sleeved shirt, goggles, and mask (for granular material).
- The grower/applicator should maintain a Material Safety Data Sheet (MSDS) from the supplier to be aware of the hazards associated with the use of the material. The MSDS will also be useful to emergency responders in case of an accident.

Contacts for the North Carolina Poultry Industry Newsletter

On-Campus Contact
Brian W. Sheldon, Ph.D., Dept Extension Leader
Dept of Poultry Science, NCSU
www.ces.ncsu.edu/depts/poulsci/
email: brian_sheldon@ncsu.edu
telephone: 919-515-5407

Field Faculty Contacts
Kathy Bunton, Area Specialized Agent, Poultry
*Iredell, Wilkes and Alexander Counties
www.ces.ncsu.edu/iredell/
email: kathy_bunton@ncsu.edu
telephone: 704-878-3154
Dan Campeau, Area Specialized Agent, Poultry
Chatham*, Harnett, Lee, Moore and Randolph Counties
www.ces.ncsu.edu/chatham/
email: dan_campeau@ncsu.edu
telephone: 919-542-8202
James Cochran, Area Specialized Agent, Poultry
Bladen, Columbus, Cumberland, Hoke and *Robeson Counties
www.ces.ncsu.edu/robeson/
email : james_cochran@ncsu.edu
telephone: 910-671-3276
James Parsons, Area Specialized Agent, Poultry
*Duplin, Sampson and Wayne Counties
www.ces.ncsu.edu/duplin/
email : james_parsons@ncsu.edu
telephone: 910-296-2143
Jody Smith, Area Specialized Agent, Poultry
Anson, Cabarrus, Montgomery, Richmond, Scotland, Stanly and *Union Counties
www.ces.ncsu.edu/union/
email: jody_smith@ncsu.edu
telephone: 704-283-3743
*(*Administratively housed in this county.)*

(continued from page 1)

Preventing Avian Flu

individuals associated with poultry across state lines and around the countryside. Whether your poultry interests are large or small, everyone needs to exercise caution when coming in contact with another poultry person or their birds. The AI virus is most often transmitted from one infected flock to another flock by infected birds, people or equipment. AI infected birds secrete virus via nasal secretions and feces. Moving infected birds would naturally result in transferring the virus to the new location. People most often spread viruses via contaminated clothing and/or boots. AI can live in manure for up to 105 days, so it could easily be spread from one farm to another on soiled boots or clothing. Equipment used on multiple farms that are contaminated with infective feces or nasal secretions can spread viruses to multiple new locations. A major problem with stopping the spread of AI is that apparently healthy birds can be infected and transmitting the virus to other birds before exhibiting any clinical signs or symptoms. This is why one of the best ways to prevent this disease is to avoid contact with other poultry.

Symptoms and Diagnosis

There are two forms of AI in poultry, one is highly pathogenic or severe, and the other is low pathogenic or milder. The symptoms of AI are varied depending on the form of AI present, the species of bird infected, and other diseases present in the infected birds. All cases of AI infection require laboratory confirmation. The most common symptoms seen in infected chickens and turkeys include: depression and decreased activity, decreased feed consumption, decreased egg production, coughing, sneezing, wet eyes, huddling, and ruffled feathers. Birds infected with the severe or hot form of AI may have edema or accumulation of fluid in the comb and wattles, blueness of the head area, and severe production drops. Severe cases will show bleeding under the skin in the shanks and high mortality. The less severe form may not be as dramatic as the severe form, but it is still important to eradicate low pathogenic AI. Countries that have chosen to "live with" the milder form of AI have seen the virus become more pathogenic, or hot, after circulating through millions of birds. Any form of AI should be considered very serious. That is why laboratory diagnosis is important. The N.C. Department of Agriculture and Consumer Services' (NCDA&CS) Animal Diagnostic Labs can test your birds for AI infection. There is no charge to you for this service. Additional information on AI may be obtained from the N.C. Poultry Federation, any County Extension office or NCDA&CS Diagnostic Laboratories.

Prevention is the Key

Preventing the introduction of AI and other viruses onto your farm should be the goal of all producers. Preventing the introduction of AI into your flock is not difficult to do if you follow some "common sense" guidelines.

(continued from page 3)

Preventing Avian Flu

- All avian species can be carriers of AI. All flocks should be confined in order to avoid contact with any wild birds, especially waterfowl.
- If you have a pond on your property do not encourage wild waterfowl to over-winter there. After visiting your pond, change clothes and boots before entering your poultry houses.
- Avoid sharing equipment with other poultry growers and do not visit their farms.

Additionally, Dr. Bob Hillman, Executive Director of the Texas Animal Health Commission recommends simple biosecurity measures that can be taken to help protect flocks:

1. "Keep a spare pair." Buy a pair of inexpensive rubber boots, and wear them only on your own premises, to avoid 'tracking in' disease.

2. "Give germs the brush off!" Use a long-handled brush to scrape off manure, mud or debris from tires, equipment or boots, then disinfect.

3. "Disinfection prevents infection!" Mix a solution of three parts bleach to two parts water, and use it liberally to clean rubber boots and equipment brought onto your farm. If visitors don't want their vehicle tires sprayed with disinfectant, ask them to park outside your gate. Other disinfectants that work against AI virus and should be mixed according to package labels include, detergents, hypochlorites, alkalis, phenols, Virkon S and gluteraldehyde.

4. "Make visitors take cover." Don't be shy about asking visitors or customers to disinfect their footwear -- or better yet, provide guests with disposable shoe covers, or footwear worn only on your place.

Care of High Pressure Sodium Lights in the Breeder House

Michael J. Wineland, Associate Professor of Poultry Science, Broiler Breeder Specialist

High pressure sodium lamps are used in broiler breeder houses because they are able to provide the high light intensity needed in the breeder houses and can be operated efficiently. While the initial cost of the lamps are considerably higher than an incandescent lamp, this payback in longer life expectancies and more efficient operation make them a good choice of light source. Additionally, the increased spacing of the lamps along the length of the house aid in reducing the capital cost of the lighting system.

The efficiency of producing visible light is considerably greater in high pressure sodium versus the incandescent. Typically an incandescent will produce approximately 17 lumens/watt (100 watt lamp) compared to a 100 watt high pressure sodium producing approximately 95 lumens/watt.

Typically a high pressure sodium lamp may have a life expectancy of 24,000 hours. This life expectancy though can be modified under different types of use. How long the lamps are burned after a start can dramatically influence the life expectancy. See table 1.

Table 1

Starting Conditions (hours used per start)	Life Expectancy (Hours)
10	24,000
5	18,000
2.5	13.440
1.25	10,080

Life expectancy ratings for HPS are based on when 67% of the lamps have survived under particular starting conditions. The normal rating is regarded as the lamp operating 10 hours per start.

End of life characteristics of high pressure sodium lamps can create management problems in a house.

(continued from page 4)

Care of High Pressure Sodium Lights in the Breeder House

As the lamp approaches its life expectancy, it cycles on and off because of an increase in resistance within the lamp developing. This may go unnoticed and result in the breeders receiving insufficient light stimulus. Once cycling starts to occur the lamp needs to be replaced immediately.

It is also important to keep in mind that fluorescent and high pressure sodium lamps will experience lumen depreciation. In other words as the lamp ages they will gradually reduce their light output. Generally for high pressure sodium, by 40% of its rated life it will have depreciated approximately 10%.

Because we want to insure that we are providing the intended amount of light it is important to follow a few simple rules for their care.

- To clean the lamps gently dust them with a soft cloth. Try not to get oil from your skin on the lamps.
- Do not use a high pressure washer directly on the lamp fixture.
- Replace the lamps immediately when they start to cycle on and off.

North Carolina Poultry Federation Honors 2005 Hall of Fame Recipients

Three poultry industry pioneers – Dr. Frank R. Craig; H. Gordon Maxwell, III; and Edwin W. Woodhouse – were inducted into the NC Poultry Federation's Hall of Fame at a special honorary luncheon held recently in Raleigh, NC.

Dr. Frank R. Craig was posthumously honored by the Poultry Federation for his far-reaching vision and his numerous professional contributions to North Carolina's entire poultry industry. Dr. Craig received both his B.S. and M.S. degrees in Agricultural Education and Poultry Science from NC State University, and he later attended the University of Georgia's School of Veterinary Medicine where he was awarded his D.V.M. degree. He then returned to NC State University's Poultry Science Department to specialize in poultry disease research. Among his many lasting contributions benefiting the state's poultry industry, Dr. Craig designed and oversaw the construction of the Dearstyne Avian Disease Research Center located in Raleigh, NC. He later held the position of Senior Vice President of Technical Services for Perdue Farms. Among the awards and honors he received during his long career, Dr. Craig was selected as the first industry recipient of the US Department of Agriculture's Distinguished Service Award for outstanding public service, and he received the Distinguished Citizen Award from the Delmarva Poultry Industry Association. Dr. Craig was respected and revered as an expert in his field, and he served on numerous state and national scientific committees. On hand at the Federation's special honorary luncheon to proudly accept Dr. Craig's award were his daughter, Melanie Craig of Riverdale, Maryland, and his brother and sister-in-law, Alan and Barbara Craig of Mount Holly, NC.

Hugh Gordon Maxwell, III, was also honored by the Federation as a 2005 Hall of Fame recipient for his numerous contributions to the growth and development of North Carolina's poultry food industry. Maxwell attended Campbell Junior College prior to entering NC State University where he received his B.S. Degree in Poultry Science. Following his graduation from NC State, Maxwell returned to his native Goldsboro and began his long and industrious career with Goldsboro Milling Company, which was founded by his Grandfather, "Mr. Hugh" Maxwell, in 1916. Throughout the years, Maxwell contributed his knowledge, time and talents toward building the business, eagerly assuming leadership positions of increased responsibility until he ultimately rose to the helm of President of Goldsboro Milling Company. As one of the largest fully integrated turkey operations in the world today, Goldsboro Milling Company and its affiliated operations employ over 3,500 associates. In partnership with Smithfield Foods, Goldsboro Milling Company annually produces over 500 million pounds of turkey products. In addition to its successful turkey operations, the company is also a major pork producer and a major

(continued from page 5)

North Carolina Poultry Federation Honors 2005 Hall of Fame Recipients

landowner with extensive timber interests in both North Carolina and Florida. Maxwell is well known and highly respected by the citizens in his beloved native community of Goldsboro and Wayne County and across the State of North Carolina and the nation. He was honored by the Poultry Federation for his tireless dedication toward building, advancing, and maintaining the success of North Carolina's poultry food industry.

Edwin W. Woodhouse was also recognized with a 2005 Hall of Fame Award for his long-time service to the poultry industry. Woodhouse served as Executive Director of the NC Poultry Federation for 33 years. He also served as Secretary-Treasurer of the NC Turkey Federation and of the NC Poultry Processors Association. Outside of his NCPF staff responsibilities, he helped North Carolina agriculture by serving on the North Carolina Legislature's Forestry, Agriculture and Seafood Legislative Study and Awareness Committee, and on the Agriculture Committee for the Alternative Energy Corporation. He also served as President of the American Association of Poultry Federation Executives, as a board member of the NC Agribusiness Council, and on the Budget Review Committee of the North Carolina Agricultural Foundation in the College of Agriculture and Life Sciences at North Carolina State University. During his tenure as Executive Director, he monitored legislation that had the potential of having positive and/or negative impacts on various aspects of the industry. He also worked closely with faculty members at NC State University, with the North Carolina Department of Agriculture and Consumer Services, and with numerous other agricultural organizations, such as the North Carolina Feed Industry Association, North Carolina Agribusiness Council, the North Carolina Farm Bureau, and other North Carolina commodity associations. He was acknowledged for his numerous contributions to the stability and well-being of North Carolina's poultry food industry.