



Litter Amendments

Amy Syester – Grower Lunch Break
9/4/24

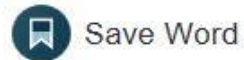


Amendment... what's that?



Merriam-Webster SINCE 1828 amendment
DICTIONARY THESAURUS

amendment noun



amend-ment | \ ə-'men(d)-mənt \

Definition of *amendment*

- a** : the process of altering or amending a law or document (such as a constitution) by parliamentary or constitutional procedure
// rights that were granted by amendment of the Constitution
- b** : an alteration proposed or effected by this process
// a constitutional amendment
- 2** : the act of amending something : CORRECTION
- 3** : a material (such as compost or sand) that aids plant growth indirectly by improving the condition of the soil
// soil amendments

Litter Amendment



- The act of adding something to the litter to improve the condition of the litter
- The need for amendments began as a result of not replacing litter after each flock and trying to conserve energy in the late 1970's
- Commercial products hit the market in the 1980's and were mainly used in the brooding area during cooler weather
- Initially used simply to control ammonia release from the litter

Industry Transition



- Total clean-out going by the wayside
- Reduced or no antibiotics ever production
- Animal welfare standards

- Lead to litter/bedding recycling programs
- Need for “value added” products

Ammonia



- Result of decomposition of uric acid by bacteria
- Litter moisture, litter pH and temperature influence how the uric acid is broken down
- Ammonia levels of 10 ppm can begin to affect respiratory system
- 25 ppm can lead to decreased body weights, higher feed conversions and increased condemnations
- Higher the ammonia – bigger effect on performance
- Controlling moisture is most important to controlling ammonia

Litter Management



**Key to
Amendment
Success**



Bedding Source



- Wood shavings most popular
 - Not as readily available as it once was
- Alternative sources
 - Rice hulls
 - Peanut hulls
 - Grasses
- Must have 4 – 5” so moisture can be absorbed
- Minimum ventilation critical on new bedding

During Flock Management

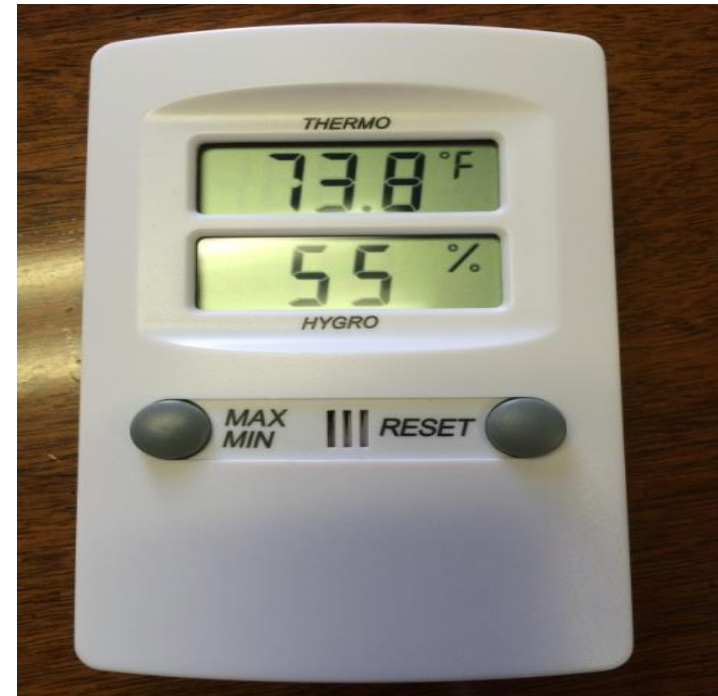


- Controlling house humidity (Ventilation)
 - 50-60% ideal
 - > 65% needs aggressive ventilation
- Controlling excess water from drinker system
 - Correct pressure
 - Correct height
- Bird distribution/density
 - Make sure birds are evenly spread in house
- Reacting to issues (Floods, etc.)

Humidity Control is Critical



- Purchase a Hygrometer (\$10-\$15)
- Monitor daily
 - 50% - 60% ideal
 - Keeping it 50% WILL cost you fuel
 - 65% - Floors are tacky
 - 70% - Floors are slippery
- Wet floors have higher ammonia
- Drying floors = heat & air



Drinker Management



Drinker Management



Too Low = Waste



Ideal = Look Up



Drinker Management



Floods Happen



React – Spread out Shavings



Bird Migration



- **Too many birds in one area**
 - More competition at equipment
 - More moisture
 - Uneven house temperatures
- **Use fences year round**

Paw Quality – Indication of litter management



Poor Paws



Good Paws



Repurposing/Recycling Litter



- Ongoing process
- Moisture hurts performance as well as impacts between flock management
- 70 – 80% of water consumption is excreted
 - 50,000 – 100,000 gallons

Between Flock Management



- De-caking house

- Removes large chunks from surface
- Small particles sifted out and stay in house
- Controls litter depth
- Will develop a hard layer of litter



Between Flock Management



- Windrowing

- Pile litter into multiple rows
- Must have minimum of 14 days between flocks
- Litter depth must be managed (6" ideal)
- Moisture from birds/litter helps generate heat ($>130^{\circ}$) to reduce pathogen levels



Between Flock Management



- Sidewalls & Corners need attention
 - Moisture accumulates around foundations
 - Should clean all corners & walls prior to crusting or windrowing



Between Flock Management



- **Pulverizing is not recommended**

- Makes surface look “pretty”
- Chunks of litter are now under the litter surface
- Does not remove moisture
- Amendments will be less effective



Between Flock Management



- Level litter
 - Must be done 3-4 days BEFORE amendments are applied
 - Many ways to level
 - Loader
 - Box blade
 - Drags



Ventilation



- Between flock IS as important as during flock
- House must be closed tight
 - Leaving doors open with tunnel fans on does not ventilate entire house
- Vent boxes should be used for even air distribution
- Allow natural heat up in house to “burn” off ammonia
 - Timer Cycle

Improper Litter Conditioning



- Cake along sidewalls
- Large chunks of cake on top or below surface
- Not enough litter depth
- Not ventilating between flocks

Flock starts at a disadvantage

Not to Mention...



- Respiratory problems
- Blind birds
- Foot pad lesions/burns
- Reduced livability
- Lower weight gains
- Higher feed conversions

Reduced Farm Income

Amendment Options...



**Do your
Homework**



Types of Amendments



- Acidifiers
- Alkaline material
- Adsorbers
- Inhibitors
- Microbial & Enzymatic treatments

Acidifiers – Most Common



- Creates acidic condition – lowers litter pH
 - Unfavorable condition for bacteria and enzymes to create ammonia
- Alum/aluminum sulfate
- Sodium bisulfate
- Ferrous sulfate (potential toxicity)
- Phosphoric acid (increases phosphorus)

How to Pick?



- Type of production
- Integrator recommendations
- What do you expect from amendment
- Manufacturer BMP's
- Cost

Most Common Acidifiers



- Aluminum sulfate & sodium bisulfate
- Each has pro's and con's
- Guidelines are different for each product
- Litter conditioning impacts the efficacy of both

Acidifiers



- “Work” when applied
- Longevity
 - House conditions at application
 - Management post application
- Failures occur when manufacture recommendations are not followed

Aluminum Sulfate



- Liquid product
- Applied before equipment is lowered
- Applied 3 – 5 days prior to bird arrival
- House must be purged of ammonia prior to application
- House can be set up once product dries (3 – 6 hours)
- Set house to run minimum ventilation immediately after application (continue running while preheating)

Aluminum Sulfate



Summer Rate / Low Challenge / <6 lb. bird

20 gallon / 1000 ft²

Winter Rate / Low Challenge / >6 lb. bird

25 gallon / 1000 ft²

Add 5 gallon/1000 ft² when windrowing or high challenge

Sodium Bisulfate



- Preheat house minimum of 48 hours
 - core floor temp should be at least 85°
- Open inlets fully and turn fans on to exhaust ammonia before application
- Apply product evenly to top of litter 2 – 24 hours prior to bird placement
- Do not incorporate into litter
- **Recent Change: Can be applied before setup – recommended rate of 150-200 lbs. per 1000ft²**

Sodium Bisulfate



Broiler Litter Age < 1 year

75 – 100 lbs. / 1000 ft²

Broiler Litter Age > 1 year

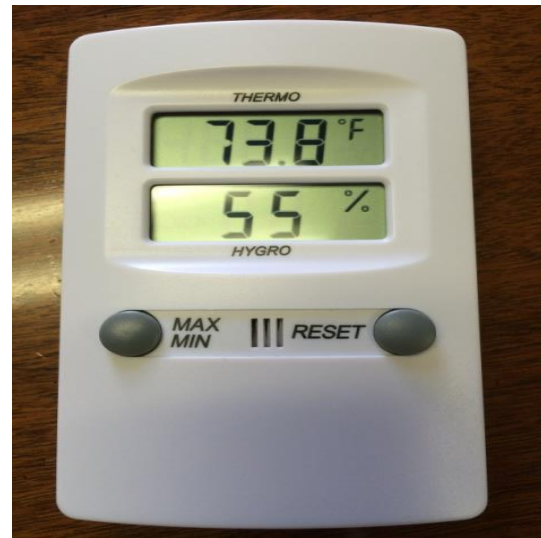
100 – 150 lbs. / 1000 ft²

**Extreme conditions such as windrowing, tilling
or special circumstances will require higher
application rates**

Ventilation



- Use caution – ammonia levels can be low
- Monitor house humidity
 - 50% – 70%
 - > 70% can cause caking and increased ammonia



Amendments



**More Value
Today**



It's So Much More



- Competitive Industry
- Best livability
- Best feed conversion
- Low fuel cost
- Animal welfare standards

Advantage over competition

Today's Amendments:



- Reduce ammonia levels
- Lower pH
 - Pathogen reduction
- Bind soluble phosphorus
- Drier floors

Full House Application

Mid Flock Applications



- Several products available for use with birds present
- Also helps reduce pH and slow down disease challenges

Amendment
Success



**Starts Before
Flock Moves**



Prepare...



- What are your floor conditions?
 - What is best conditioning method
- How long is estimated layout time?
- Seasonal needs & rates
- What amendment will be used?
 - Set up before or after product is applied

Remember...



- Acidifiers work every time
 - Litter Conditioning
 - Ventilation
 - Following manufacturer guidelines

Goal is to get most bang for your buck

But....



- Litter amendments cannot make up for poor litter management
- Is your litter management going to





asyester@chemtradelogistics.com

973-387-5239