

LITTER MANAGEMENT IN ABF PRODUCTION

UNIVERSITY OF
MARYLAND
EXTENSION



GROWER LUNCH BREAK NOTES APRIL 7, 2021

Connie Mou, Technical Services Manager, Agricultural Division, Jones-Hamilton Company, cmou@jones-hamilton.com, was introduced by Jon Moyle, who knew her from her University of Georgia research days, and who is originally from MD, gave a very complete presentation and had a wealth of information on litter management in ABF production.

The link to her presentation can be found:

<https://umd.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=adceaa4c-37b9-45f0-94b7-ad030120c5eb>

Connie sees the biggest focus we can do to navigate challenges we now face for ABF, NAE, increase animal welfare, is to really focus on litter management.

What does ABF, increased animal welfare got to do with litter management?

Heavier emphasis on maintaining good paw quality

Veggie diets have been attributed to higher litter moisture

Potentially increased disease challenges

Increased focus on animal welfare means pressure to maintain lower ammonia

It all happens inside our litter.

One of the most ideal methods to address these points is to maintain a drier litter to achieve good paw quality, keep ammonia levels down, and reduce disease challenge.

We need to know the tools available to help us achieve these goals. And, how much moisture needs to be removed? We need to understand where/what is contributing moisture into our houses?

Sources of moisture:

- Heaters – one gallon of propane can produce 0.81 gallons of water
- Drinker systems – pretty obvious but leaky, pressures, heights – need to keep on top of every day
- Birds – biggest contributor of moisture –80% or more of water birds consume is distributed back to litter

Therefore, if you remove the moisture in the amount of what the birds consume each day, you're on your way to a drier, healthier litter.


Monitoring bird water usage can help producers figure much to remove each day

The *more accurate* the water meter, the better ability a producer has in *controlling moisture*

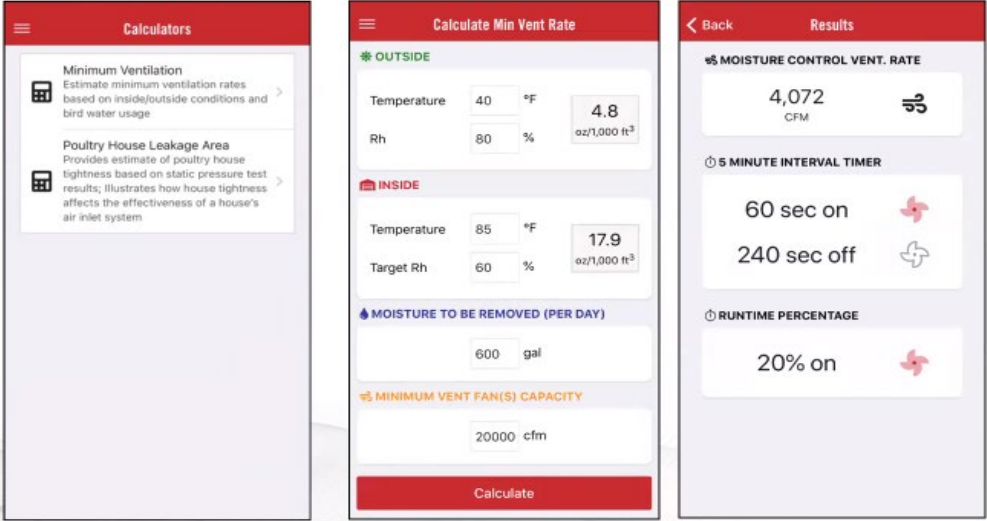
Writing down (and Connie suggests graphing to visually see) the water usage each day is extremely helpful to know how much water needs to be *removed from the house* each day.

How do we remove the moisture?

- Ventilation – top tool to manage our birds
 - How much and what rate of ventilation to help maintain dry litter? There are many free apps out there. The Univ. of GA has a free one, the 'Poultry 411' (Minimum Ventilation) app, that you can use on your phone for different calculators




Poultry 411 app (Minimum Ventilation)



The screenshot displays the Poultry 411 app interface, which is divided into three main sections:

- Calculators:** This screen lists two main functions:
 - Minimum Ventilation:** Estimate minimum ventilation rates based on inside/outside conditions and bird water usage.
 - Poultry House Leakage Area:** Provides estimate of poultry house tightness based on static pressure test results; illustrates how house tightness affects the effectiveness of a house's air inlet system.
- Calculate Min Vent Rate:** This screen allows users to input data for both outside and inside conditions.
 - OUTSIDE:** Temperature is set to 40 °F, resulting in a moisture control vent rate of 4.8 oz/1,000 ft³.
 - INSIDE:** Temperature is set to 85 °F and Target Rh is set to 60%, resulting in a moisture control vent rate of 17.9 oz/1,000 ft³.
 - MOISTURE TO BE REMOVED (PER DAY):** Set to 600 gal.
 - MINIMUM VENT FAN(S) CAPACITY:** Set to 20000 cfm.
 - A red **Calculate** button is at the bottom.
- Results:** This screen shows the calculated results:
 - MOISTURE CONTROL VENT. RATE:** 4,072 CFM.
 - 5 MINUTE INTERVAL TIMER:** 60 sec on, 240 sec off.
 - RUNTIME PERCENTAGE:** 20% on.



As you can see this app gives you a basic way of *roughly* interpreting your bird water usage into ventilation rate to maintain a specific target humidity. If your house isn't really tight or if you have broken inlets, this may make a difference in calculations; also, the app assumes that your litter is somewhat dry to begin with.

There are also a lot of humidity sensors out there that can be found at a decent price. Best practice would be to be able to attach it straight to your controller.

The ideal humidity is keeping it at 40-60%. Managing is a daily task. Ventilation rates change due to outside conditions. **Rainy days you do need to increase ventilation rates.** You'll find that inside air still has a lot more moisture in the air than the outside air, even when it's raining, which means you're still able to remove moisture even with rain outside. You may need to use more air to remove the same amount of moisture, but it is cost affective.

Since managing litter moisture at a Rh above 70% is very expensive, and to keep drier litter, good paw quality, ammonia level low, and keep costs low, one possibility may be maintaining a moderate humidity level like 60% and supplementing that with air movement. As you increase air speed, you're increasing the amount of moisture you can take from that litter.

Circulation fans traditionally were used to redistribute hot air that tended to collect at the ceiling, which saved on gas. We found that these fans weren't cooling the surface and we didn't want surface fans to risk chilling the chicks. To achieve dry litter, better paw quality, we will need to move more air across the litter surface.

Average 150 ft./min. Higher volume, higher power circulation fans and higher air velocity make for potentially greater litter drying.

In a 3-year study at Univ. of Georgia, Connie tried to attain ideal litter moisture of less than 25%. They found that the combination of preheating and *higher* air movement made for drier litter vs *lower* air movement. Also, the houses with higher movement had uniform conditions, along sidewalls. Whereas just the opposite in lower air movement houses. The moisture near sidewalls was higher.

Overall, paw quality was better in houses with higher air movement.

Also highlighted by this study was how influential bird distribution is on litter moisture management. With low air movement, underneath tube heaters, it got overheated and bird distribution was affected

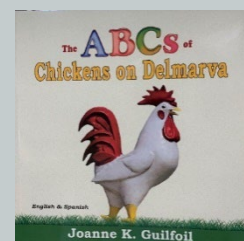
- This moved birds to sidewalls, making more poop in those areas, creating more moisture there
- With higher air movement, more uniform floor temps, birds are much more evenly spread
- Heater run time evened out between houses, control and treated houses

Ammonia Sensor proved levels were lower with higher air movement. The houses feel better, it smells better, so the fans do make a difference.

Humidity control is also very important – it’s a combination effect. All the fan speed is good but the humidity has to be under control for best outcome.

Thank You Connie Mou! Fantastic presentation!

Joanne Guilfoil has published “*The ABCs of Chickens on Delmarva*” book for children in both English and Spanish. Well written and plenty of pictures and includes some our Women of Poultry, Jenny Rhodes and Georgie Cartanza!



To get yours: contact Joanne at guilfoiljk@aol.com or call 302-604-2015 or go to the website: www.shorebooksllc.com, which takes PayPal.

EVENTS

➤ Future Wednesday Grower Lunch Breaks with Extension:

May 5 – Dr. Nanette Imelda-Geniec, the new Veterinarian at University of Delaware, Georgetown

June 2 – Cool Cell Maintenance

Register at: <https://umd.zoom.us/meeting/register/tJ0kfuyhqjSpGNzp8wIhemiV6PeHRsJpxntO>

Go to this website, register, and you will receive an email with all the ways you can connect and participate.

➤ Delmarva Chicken Association Annual Booster Bar-B-Que

June 18 – Friday – 4-8:00 p.m.

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|----------------------------------|-------------------------------|
| – Delaware State Fairgrounds | Vender Showcase |
| – Jimmy Charles live performance | Registration info forthcoming |

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