

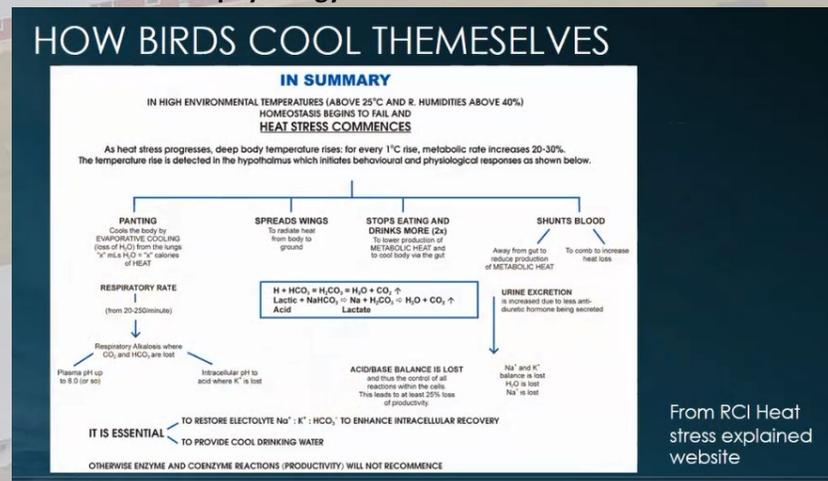
OPTIMIZING PERFORMANCE DURING HOT WEATHER

Wednesday's Grower Lunch Chat (July 22)

Georgie Cartanza, Extension Agent for the University of Delaware Cooperative Extension, presented a lot of great information. We started with introductions of those present from both MD and DE. This subject is so timely due to the extreme temperatures lately!

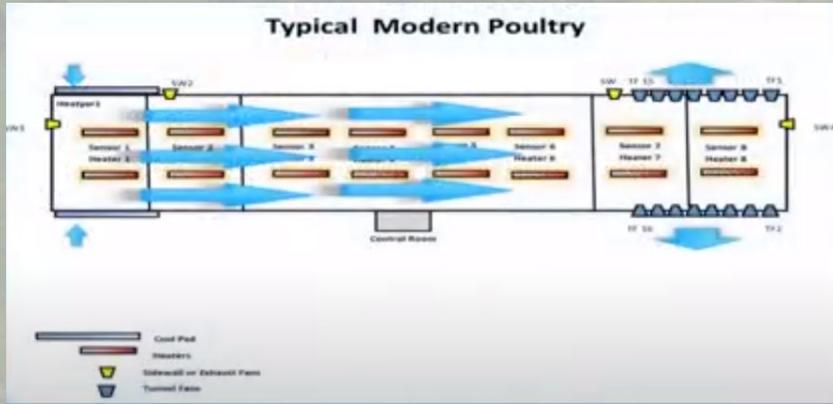
Also, at the bottom of these Notes, **CAFO instructions on how to find your Topographic maps and Water Code 12 digits.**

- **The Goal: Get the most amount of chicken for the least amount of feed**
 - Create an environment for chickens to optimize this feed and turn it into body weight
 - What do I do as a Grower to influence feed conversion?
 - Air, Water, and Litter Quality
 - Temperature Control and Light Intensity
 - Water and Feed Availability
 - What the Integrator influences?
 - Chick and Feed Quality
 - What do we do together to achieve the goal of best chicken body weight?
 - Vaccination and Mortality
 - We want to give birds the least amount of stress so all that food energy goes to growth and not trying to keep themselves cool or try to recover from stressors
- **The devil is in the details!**
 - Industry has gotten very competitive. Georgie says 'Inspect what you expect.'
 - Be mindful of bird droppings, water and feed consumption, temperature changes
 - Equipment malfunctions may cost you expedientially if you let them go
 - Be mindful of weather changes outside the house
- **How birds cool themselves – the physiology of how chickens handle heat stress.**



- Birds pant to get rid of body heat, the evaporation of this moisture is now in the air around them
- Moving air over them is a way to cool them
- The amount of surface area exposed to the air around them helps, so they spread wings

- **The challenge to cool isn't just from the outside weather, it's coming from the inside too!**
 - The birds themselves produce heat
 - For every pound of chicken in the house, there is 6 to 8 BTU's of heat being produced – in a house holding 35K chickens that = 2,240,000 BTU's of heat!



- **Tunnel Air Movement (Ventilation)**
 - Creating a wall of air that's lifting heat up from the birds and moving it out of the house
 - Minimum of 60 seconds to move through and out of the house or faster
 - This gets rid of those BTU's while also creating wind chill on the birds
- **How tight is the house? Not just a cold weather issue**
 - Tunnel ventilation mode, and the house isn't tight, the air coming in through cracks and holes is short changing that wall of cool air
 - Air is always going to take the path of least resistance and the easiest way to get it is through cracks, around doors, ceiling holes, or around base of walls
 - Also, check around attic vents too, check for and seal cracks
 - Any place you see light coming through in the house, you are losing air temp
- Pads
 - Air will flow through a dry pad easier than a wet pad
 - If more surface area of the pad is wet, the better the cooling efficiency
 - If your pad has shrunk or is not clean you aren't getting most out of your system
 - Tunnel inlet door or curtain – create turbulence – 45% is good opening
 - Knee braces act like speed bumps for the air flow on the side walls
 - Wind speed – anything that inhibits air, it takes 5 ft. past that to get air back together and moving again
 - Over 70% of the air coming in through the cool pad comes in the first 1/3 of the pad opening, closes to the fans
- **The bigger the bird, the tighter the density in the house, the more difficult to remove heat**
 - Bird weight relative to bird surface area and to its mass or volume
 - Harder to cool a larger bird than a smaller one
 - In extreme conditions, you need to keep birds comfortable, you may have to use tunnel fans for 30 seconds for evaporative cooling to take the edge off, this isn't normal, but in excessive heat, you do what you've got to do
 - Density of birds makes the air harder to get around if they are close to market weight
 - Bird distribution is extremely critical
 - The majority of the air comes in first 1/3 of the house
 - Need to get birds to spread out throughout the house – feed distribution can be affected

- If birds bunch, air is not moving around them and birds may even be hotter near the cool pad end of the house
- Migration fences are a good tool

➤ **Evaporative Cooling Pads**

- Adds humidity and adds moisture
 - Keep in mind the fans do their job and the cool pads put a lid on it
- Very important to keep clean. Wash from inside out with low pressure so not to damage
 - Scale build up and dirt will inhibit air and water dispersion on the cool cell pad
 - Georgie was amazed at the difference in weight with scale, dirt, minerals, dust before cleaning, which make them lose their effectiveness

➤ **Managing for Extreme Heat**

- Clean fan louvers and butterfly shutters often! One day's worth of dust can drop airspeed by 100'/minute
 - Unplug and take a brush or blower to clean them off fans and motors
- Check evaporative cooling pads frequently. Pumps can malfunction.
 - Is the water going where it should, etc.
- Poultry house is like a 'heat bank account' – make extra withdraws at night. Leave fans on longer to drop the core temp
 - With multiple hot days, leave fans on a little longer at night to purge excess heat out of the house so to start next day with core temp not as warm
 - It takes longer to cool birds than it does to heat, so keep that core temp down
- Long dark periods, makes the birds hotter (Univ. of GA information shows)
 - Leave lights on at least those first 4 hours at night to relieve stress on the birds
- Don't use cool pads before 85°F – research shows this is best. But, follow integrators recommendations.
- Tunnel doors approximately 45° angle
 - Tunnel ventilation can be done on young birds to keep them comfortable
 - Age of birds (weeks) +2 will give you the amount of fans, and cool pad on for 30 to 60 seconds, a couple of degrees above that to keep that lid on the temp

➤ **Keys to tell if ventilation is working**

- Look at bird behavior, comfort, and distribution
- Check your temperature
- Check %Relative Humidity (%RH)
- Check static pressure – fans, cool pad clean?
 - Before you get chickens, check each fan before turning them on
 - Tachometer is a good way to check RPMs of fans
- Check air speed

➤ **Safety system**

- Make sure back up thermostat is set
- Backup/fail safes are working

Question: Recommended fan/birds: new birds, age in weeks of the birds +2 for 60' wide house.

Jim Karsnitz (who had bad phone reception during meeting) **Added:** If all is operating correctly, we appear to have no problems with excessive heat. The integrators I have spoken with indicate all is going well unless there is a serious problem, like a power outage.

I am afraid we are becoming complacent with maintenance. I recently tested fans that were creating about 6000 CFM less than Bess published numbers. A simple way to determine fan performance is by checking RPM's with a tachometer. Harbor Freight has one for less than \$50; cheap insurance for a grower.

(Jim Karsnitz continued)

The second thing I am seeing is “streaky” pad. If you look down the pad at an angle, you can observe dry streaks where water does not cover the pad. Not only do you lose cooling potential, but you introduce hot air into the house. This is usually caused by obstructions in the distribution pipe. The pipe should be flushed frequently and, if the holes are plugged, the grower must clean them.

Other Things:

- A grower was surprised by a smaller time between flocks and was running fans to rid the house of ammonia smell. **Optimum** is to **spread litter 7 days prior** to receiving new chickens. You need this time to windrow (when the litter is piled in a conical shape so it heats up to reduce pathogens, it helps conserve litter) and then some time for it to settle after leveling.
- When is **CAFO** Notice of Intent (**NOI**) due: **September 6, 2020**
 - Integrator contact person is a new requirement
- **Topographic Map**: Jon Moyle put together [instructions](#) or see below
- **Water Code 12 Digits**: (Second section of CNMP) He provided [instructions](#) on how to get MD 12-Digit Watersheds or see below

NEXT GROWER LUNCH BREAK IS WEDNESDAY, AUGUST 5, AT NOON

Topic: Generators for Poultry Houses

Presenter: Tim Norman, Barnes Electric



Register at: <https://umd.zoom.us/meeting/register/tJ0kfuyhqjsgGNzp8wlhemiV6PeHRsJpxntO>

If you would like to **sponsor/host/present** at a future 1st Wednesday of the month Grower Lunch Breaks, please contact one of our Extension Team Members for available dates and topics. They will then direct you to the following Eventbrite website:

<https://www.eventbrite.com/e/grower-lunch-break-sponsorship-and-host-page-tickets-114425142682>

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