

1  **Optimizing Tunnel Ventilation**2  **HOT WEATHER VENTILATION**

- The goals:
  - Remove heat from the birds
  - Reduce temperature of incoming air
  - Reduce stress
  - Provide optimum growing environment

3  **Bird Heat Balance**

- CONDUCTION
- CONVECTION
- RESPIRATION

4  **Thermal Comfort Zone**5  **HEAT SOURCES – HOT WEATHER**6  **Four Cornerstones of Hot Weather Ventilation**

1. Use enough fan power
2. Humidity is not your friend
3. Take advantage of night-time ventilation
4. Never let the cool-cell turn a fan off

7  **1. Use Enough Fan Power**8  **Bird Wind Chill**9  **Wind Chill: Rules of Thumb**

- Young Birds—2.5 Degrees/Fan
- Four Week Age—1.5 Degrees/Fan
- Big Birds—1 Degree/Fan
- Numbers change with mega-houses
- Fans sizes vary greatly
- Greater With Cold Air
- Less With Hot Air
- GREATLY REDUCED ABOVE 90 Degrees
- Monitor temperature rise in house, goal  $\leq 5^\circ$

10  **2. Humidity is NOT Your Friend**

- Birds use internal evaporative cooling to self regulate body temp – panting.
- Heating Air By 20°f Will Cut It's RH By 50%
- Evap Cooling Air 10°f Will Increase The RH By About 25%
- FRONT ENDS OF GOOD TUNNEL HOUSE WILL BE TACKY
- TURNING ON COOL CELLS BEFORE 80 DEGREES CAN BE A MISTAKE

11  **3. Take Advantage of Night Time Ventilation**12  **Night Time Ventilation Rules**

- Temps go down / Rh goes up.
- As Rh increases, the birds ability to self regulate temperature decreases.
- If we allow the temperature drop to turn off the majority of our fans, we will heat stress birds at night and not know it.
- Manually secure a minimum level of PM ventilation – based on age – use the controller!
- Turn cool-pads OFF at night.

13  **4. Never Let the Cool Pad Turn a Fan OFF!**

- Cool pads can be run on young birds without running the full complement of fans.
- As birds age, number of fans prior to CP increases
  - Generally this is done only if you have partial timing ability – control program - 80° rule still applies\*
  - Weeks of age +3 = fans before water
- IF you question whether you're running pads too quickly, too aggressively – use this general guide:
  - If my pads come on and shortly afterwards a fan turns off or a level drops – move the pad setting higher by 1-2 degrees.

15  **Pressure Increases Exponentially**23  **NPTC Mission**