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Ventilation System Maintenance

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Tunnel ventilation is the backbone of environmental control in modern commercial poultry barns, and the condition of the ventilation system often determines whether birds merely survive heat events or continue to perform efficiently through them. At its core, tunnel ventilation depends on moving large volumes of air at high velocity from one end of the house to the other, creating a wind-chill effect that helps birds dissipate heat. When every component is working properly, this system can keep birds at optimum body temperature even under challenging summer conditions. However, the margin for error is smaller than many realize. Relatively minor maintenance issues—dust accumulation on fan blades, worn belts, or partially opening shutters—can quietly reduce airflow by 20 to 30 percent, undermining cooling capacity and increasing the risk of heat stress, poor feed conversion, and uneven flock performance.

The most effective tunnel fan maintenance programs are built around timing and consistency, with the period between flocks representing the single most important opportunity to restore system performance. During this downtime, fans should be thoroughly cleaned, including blades, housings, guards, and shutters. Dust, feathers, and grease deposits not only reduce the aerodynamic efficiency of the blades but also increase resistance in the system, forcing fans to work harder while moving volume of air. At the same time, belts should be closely inspected and replaced if there is any sign of wear, or damage. Remember, belts for tunnel fans will not show signs of wear like the belts on a car. Pulleys should also be checked for alignment and groove wear, since even small misalignments can compound efficiency losses across multiple fans.

Shutter operation is another frequently overlooked factor that can have a substantial impact on overall performance of ventilation system. Shutters must open fully and freely to allow maximum airflow. When dust buildup or mechanical wear prevents them from opening completely, they effectively reduce the fan's output, even if the motor is operating normally. Cleaning and testing shutter movement between flocks can prevent this hidden restriction. At the same time, attention should be given to bearings, motor mounts, and electrical connections to ensure that each fan operates smoothly and safely when called upon during peak demand.

Beyond the fans themselves, system performance depends heavily on the integrity of the barn or house. Air leaks are one of the most common and costly inefficiencies in tunnel-ventilated barns.

Any air entering the house outside of the intended inlet path reduces airspeed over the birds, weakening the cooling effect that tunnel ventilation is designed to provide. Doors, curtains, sidewalls, and ceiling penetrations should be sealed as tightly as possible so that incoming air is forced to travel the full length of the house. Without this control, even a well-maintained fan system cannot deliver its intended results. Remember, air leaks are cumulative and should not be taken in isolation, in other words each hole adds to the total amount of air leakage, so a hundred small holes are the equivalent of one large hole.

Producers should also rely on a few key measurements to evaluate whether their ventilation system is operating as expected. Static pressure is one of the most useful diagnostic tools, with typical tunnel operation falling within a relatively narrow range. Readings that are too low often indicate excessive air leakage or insufficient restriction, while readings that are too high can point to clogged cooling pads or airflow obstructions. Temperature differences from one end of the house to the other provide another practical indicator. Ideally, this gradient should remain small; larger differences suggest that air is not moving effectively through the building. Airspeed measurements, taken at bird level, offer a direct assessment of the cooling effect and can help confirm whether maintenance efforts are translating into real-world performance.

It is also important to consider how tunnel fans interact with other components of the ventilation system, particularly evaporative cooling pads where they are used. Clean, properly wetted pads can significantly enhance cooling, but if they become clogged or unevenly saturated, they add resistance and reduce overall airflow, increasing static pressure and decrease overall efficiency of the fans. Coordinating maintenance of fans and cooling systems ensures that gains in one area are not offset by losses in another.

Finally, no discussion of tunnel ventilation maintenance is complete without emphasizing the importance of backup systems. Power outages or equipment failures during hot weather can lead to rapid and severe losses, sometimes within minutes. Regular testing of generators, along with maintaining an inventory of critical spare parts such as belts and motors, is essential for risk management.

In practice, the most successful operations treat tunnel fan maintenance not as an occasional task but as an ongoing management priority. Clean fans, properly functioning shutters, well-maintained belts, and building free from holes, work together to deliver the wind speed and air flow needed to keep birds comfortable and performing to the highest standards. When these elements are consistently addressed, producers not only reduce the risk of catastrophic losses during heat events but also improve overall flock performance throughout the production cycle.

If you would like to learn more about this and other ventilation aspects there is an upcoming workshop in Jonesboro, AR, on July 9, 2026. See accompanying flyer for details.



**Summer Workshop
Series Presents:**

Ventilation Practices and Principles

When?

July 9, 2026

11:45 AM to 2:00 PM

Lunch will be provided

Location:

Craighead County Ext Off.

611 E Washington Ave

Suite A

Jonesboro, AR 72401

Gain practical, on-farm strategies to for improving poultry house ventilation and environmental management. This workshop will cover static pressure, wind speed, humidity management and ventilation system maintenance to help optimize bird performance and house conditions.

Attendance is free but registration is required

Questions?

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