

Poultry Ventilation Pointers →

Managing Transitional Ventilation

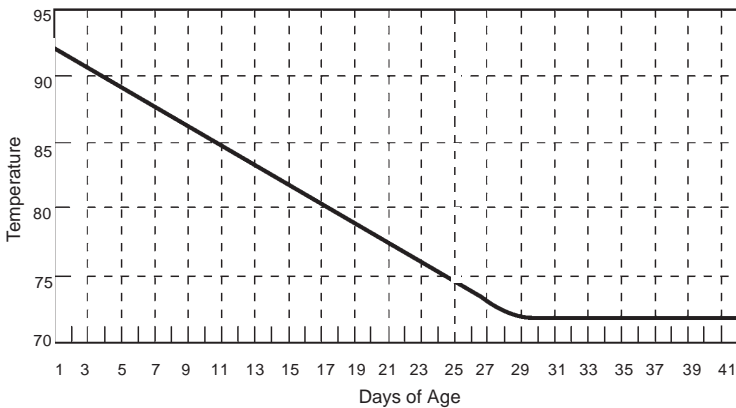
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Operator must be alert to need for ventilation setup changes. And manage the transition smoothly →

Fall and spring are transitional seasons, when daytime temperatures may reach the upper 80s in many places in the Southeast, but evenings often dip into the 50s. Because of these thirty to forty degree fluctuations, poultry growers and flock supervisors find these seasons a difficult time to manage poultry house ventilation systems. Days and nights like this also occur from time to time in other seasons, especially during winter in more southern areas.

Outside temperatures greatly influence in-house conditions and ventilation requirements. To keep in-house temperatures steady and in the range best suited to bird growth when outside weather is very changeable takes an attentive operator on the site. Often, a daytime hot-weather setup must be changed to a night-time cold-weather mode and then back again to hot-weather the next morning, and so on. The challenge for a poultry producer is in recognizing the times when the system setup needs to be changed and in managing the transition smoothly.

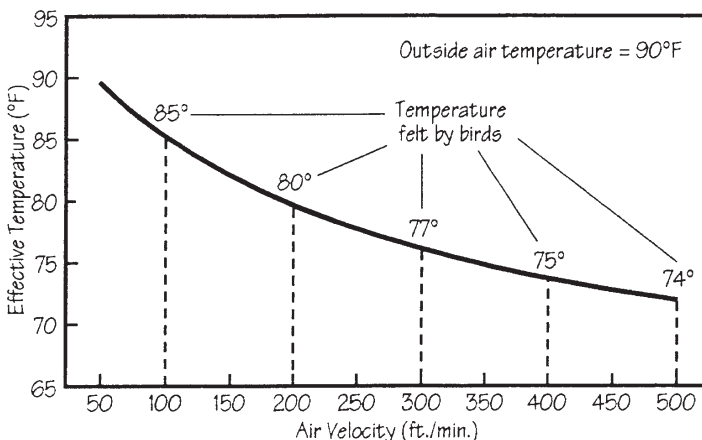
Our goal in ventilation is to keep in-house temperatures at the right levels for the birds throughout the grow-out. The graph below shows the daily temperatures that produce the best broiler feed conversion and weight gain as a grow-out progresses.



out progresses. The younger the birds are, the more critical the temperature is, but ventilation needs to be managed throughout the cycle to meet bird needs as they change.

It is also important to remember that the *effective*

temperature felt by the birds depends on the velocity of the air flowing over them. Tunnel ventilation works for hot conditions because it produces a wind-chill effect, so the birds feel an effective temperature ten to fifteen degrees lower than the thermometer reading. In changeable weather, birds often need



high-velocity tunnel cooling during the day, when temperatures get into the 80s. But as the outside temperature begins to drop in the afternoon and evening down into the 70s, 60s, and below, continuing to run tunnel ventilation can cause birds great discomfort.

Ventilation goal is to maintain in-house temperatures that support best bird performance →

Wind-chill effect of high velocity air is a grower's friend in hot weather – but will hurt bird performance if outside air temperature is low →

Sometimes heat removal is needed but we must not allow *cold air* to flow directly over birds

Using sidewall vent box inlets with tunnel inlets closed, we can turn on up to half of the installed tunnel fans

Static pressure controllers on inlets give much more precise control

Transitional setup using tunnel fans with sidewall inlets allows high air exchange rates without putting cold air on birds

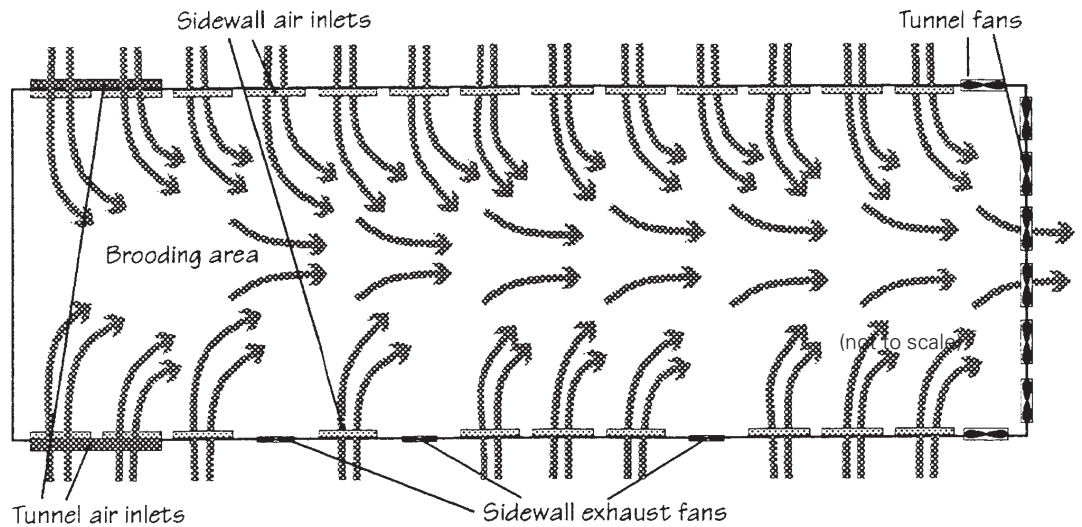
Transitional ventilation fills gap between hot-weather and cold-weather ventilation needs

The challenge for ventilation management comes under such conditions when we need to remove heat from the house, but moving *cold air* directly over the birds is likely to produce *chill stress* and seriously reduce performance. This problem is most likely to occur in “in-between” and changing weather conditions, and also with birds in the “in-between” growth stage when we are past the brooding phase but birds have not grown very large.

The solution is to change the ventilation setup to bring air in through the sidewall vent boxes, which allows for bringing in fresh air and removing heat from the house but does not put the outside cold air directly on the birds. To get more heat removal than is possible with the minimum-ventilation setup, we can use the tunnel fans in this setup instead of the sidewall exhaust fans

This relatively new ventilation method, called “transitional ventilation,” is helping many growers better manage challenging up-and-down or in-between conditions. With the tunnel inlets fully closed, we can use up to half of the installed tunnel fans to bring air in through the sidewall inlets. This arrangement allows us to remove just as much heat from the house as would be removed in tunnel ventilation using half of the fans. The difference is that using the sidewall inlets promotes good air mixing and keeps the cooler outside air from flowing directly over and chilling the birds.

The switch to the transitional ventilation setup from minimum ventilation setup can be controlled by a thermostat which overrides the minimum ventilation timer. Tunnel fans are then staged on as needed. For most effective control of the in-house environment, the vent boxes should be on static pressure-actuated controllers. These controllers adjust the openings as the number of fans running changes. It is difficult or impossible to make these adjustments manually.



Transitional Ventilation Setup

While automatic controllers can be an invaluable help, the controllers and thermostat settings themselves must be kept under good management oversight. It is the grower who has ultimate responsibility for determining the best way to control in-house conditions. You must watch both inside and outside temperatures as well as the birds themselves to judge when changes need to be made. The “in-between” conditions have always been difficult. Now, transitional ventilation fills the gap between cold-weather minimum and hot-weather maximum (tunnel) ventilation. It is a great tool for coping with situations when we need to exhaust house heat but have to avoid putting cold airflow on the birds.