# Prioritize your dairy's cooling and ventilation

Written by James Kleinke for ***Progressive Dairyman*** / November 2015

When ventilating dairy facilities, minimizing heat stress is not the only concern.

Your herd's health thrives year-round on fresh air, but it may be a challenge to determine where the dairy's dollars should be spent on cooling and ventilation.

It is critical to replace the stale air within all locations of your facility. When stale air, which contains ammonia, moisture and pathogens, combines with the 1,500 British thermal units of heat each cow generates, the resulting environment can have detrimental effects on cow health and performance, even outside of the peak heat stress season.

## Start with the milking parlor and holding pen

So where should one begin when properly ventilating your dairy? Where should you place your priorities when putting together a plan? Which areas should you ventilate first?

According to a series of white papers developed by the University of Wisconsin Department of Biological Systems Engineering, the milking parlor and holding pen should be at the top of the list when prioritizing ventilation on a dairy. These areas are critical for a few key reasons. First, moving the cow from her comfortable environment causes stress.

In a short period of time, she must adjust from relaxing in her stall and chewing her cud to getting up and traveling with her herdmates to the holding pen. This movement elevates the amount of heat generated by each cow's body, and it is compounded by the high animal density in the holding pen.

Even on a cool day, the added heat created by exercising each cow can elevate a holding pen far above a temperature-humidity index (THI) of 68, the point at which cows will experience the negative impacts of heat stress on milk production, reproduction and hoof health. Add to the heat the stale air full of ammonia, added moisture and pathogens, and you have now created an undesirable microclimate. These conditions agitate cows, causing additional stress just before you ask them to step into the milking parlor and drop their milk.

With these factors in mind, it is not surprising that multiple studies indicate the first and second areas that should have proper ventilation are the milking parlor and the holding pen. Positive pressure into the milking parlor will allow fresh air to enter into the facility, and when possible, you should continue to push the air out through the holding pens until the warm, contaminated air exits the building. Open sidewalls introduce fresh air while allowing stale air to escape. This additional fresh air will further enhance the environment for the cows, encouraging them to relax and drop their milk.

Remember, temperature probes, thermostats and environmental monitors should be located where they will capture the true reading of the cows' environment. It may be as much as 7ºF warmer in the center of the holding pen than along the wall. You want your ventilation system to provide as much relief to heat-stressed cows as possible.

# Cooling priorities

There are some different opinions emerging on whether your high-producing pens or close-up dry cows should be next in line for cooling and ventilation, but most research has shown that proper ventilation in all locations on your dairy has positive benefits, and it is a matter of priority and preference versus ventilating or not ventilating. A rule of thumb for prioritizing cooling is listed below:

**1.** Parlor
**2.** Holding pen
**3.** Close-up dry cows*
**4.** Fresh cows*
**5.** High producers*
**6.** Low producers*
*Note: Points 3 through 5 are interchangeable.

The ventilation needs for fresh cows and low producers should not be overlooked. Good ventilation and heat abatement will lead to an improved bottom line with the animals; the challenge is that the return on investment is not as strong when compared to the milking parlor or holding pen.

# Don’t overlook this area …

Beyond milking facilities and cow barns, a location that is often overlooked is the calf barn. Fresh air is critical in these locations and can be tricky in cold climates, but a properly ventilated calf barn will yield success without a tremendous amount of time and money. A little bit of proper planning will go a long way with preventive calf health and reduce labor costs and variable costs related to keeping calves healthy and free of respiratory disease.

As the days get shorter and the nights cool down, ventilation and fresh air are critical in dairy facilities. You should protect your cows from frigid air drafts while maintaining a minimum ventilation rate of 50 cubic feet per minute per cow. This will reduce moisture while diluting methane and ammonia pathogens. An environment that is too cold in the winter can lead to frozen waterers and manure, which can cause injury and hoof issues.

Starting in the parlour is a great first step, but make sure you complete your full ventilation plan to ensure the best rate of return on your investment. ***PD***


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