

Calf barn ventilation: Install new or make improvements?

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AT A GLANCE

Buying new ventilation might be the easier option, but it isn't always feasible or necessary. Sometimes ventilation isn't the problem and, other times, it just needs a few tweaks to ventilate properly.

The goal of a properly designed ventilation system should be to provide clean, fresh air at all times for healthy calf development. Ventilation is responsible for removing accumulated heat, moisture, airborne pathogens and noxious gases from the animal's environment. To achieve the best ventilation outcome, it is important to critically evaluate the environment of the barn.

Critical evaluation of air quality

When a calf barn experiences high pneumonia rates, it is human nature to question the efficacy of the barn's ventilation; however, not all calfhood respiratory issues are related to poor air quality. Work with your veterinarian to first determine the origin of the pneumonia before assuming changes need to be made to the ventilation. This process is crucial, as decisions

made from this point forward will depend on whether calves are experiencing respiratory illness from environmental or contagious sources. Diagnostic sampling and testing of sick or dead calves can provide information about what pathogens calves may be infected with and help producers make informed management decisions.

Contagious pneumonia is associated with calf-to-calf contact (or other vectors) spreading disease. If your farm struggles with contagious pneumonia, investing in a new ventilation system may make little, if any, impact on your calves' respiratory health. If contagious pneumonia is ruled out, and air quality is a concern, evaluate the current calf barn ventilation system to determine if there are areas where improvements can be made or if installation of a new ventilation system is necessary.

Environmental pneumonia

Proper calf barn ventilation is more than just having fans in the barn. Having a well-designed ventilation system can improve calf health and calf-raiser profitability.

is strongly associated with poor air quality at the calf level. High humidity, inappropriate drafts and rapid seasonal changes can all contribute to respiratory issues in calves. Proper calf barn ventilation is more than just having fans in the barn. Having a well-designed ventilation system can improve calf health and calf-raiser profitability.

Ventilation opportunity areas

System maintenance

First, verify the current ventilation system is working properly in order to determine if and where adjustments can be made. All fans and tubes should be evaluated regularly to ensure they are operating correctly and that protocols are in place for fan maintenance, which will maximize the longevity of the system. Fan belts may stretch over time and need to be replaced in order to maintain

correct fan outputs. Keep fan inlets clear of debris to prevent decreased fan outputs from compromised inlet surface areas (see **Figure 1**).

Calf environment

Calf barns are often not ventilated correctly because air exchange is not occurring at the calf level. A ventilation system may function properly from a mechanical standpoint, but if the fresh air is delivered and exhausted more than 4 feet off the ground, it will not impact the calf's environment.

Perform a fogging test with smoke bombs to safely and effectively visualize current ventilation and demonstrate if the fresh air is being delivered at calf level. Smoke can also be used to determine whether exhaust methods are effective. Smoke not cleared out of the barn in a timely manner (15 minutes or less) after

FIGURE 1 Two blocked fan photos



Photos provided by Crystal Creek.

FIGURE 2 Fan vs. fan

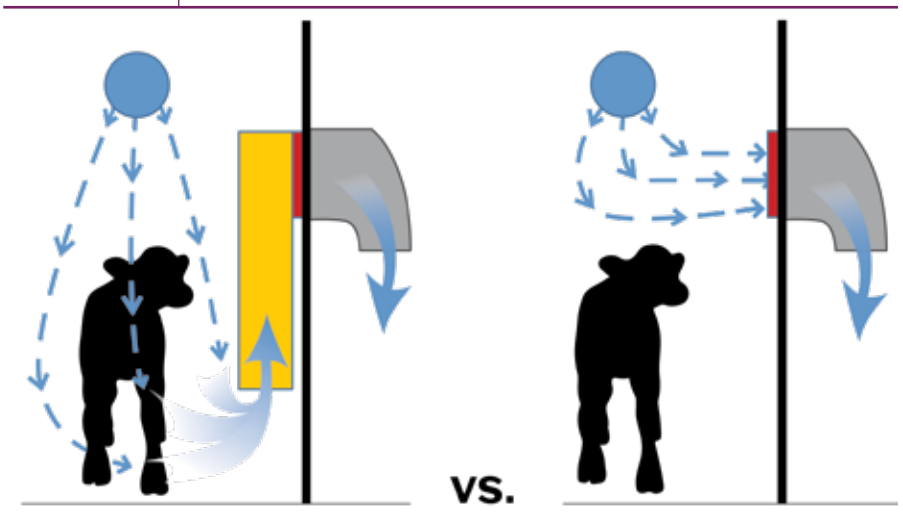


Illustration provided by Crystal Creek.

FIGURE 3 Curtain air on ventilation



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introduction indicates air exhaust methods need improvement.

Exhaust fan efficiency

One technique to assist with the removal of contaminated air from the calf's immediate space is to build an enclosed box down from the exhaust fan to the height of 3 feet off the ground (see **Figure 2**). This will force stale air to be removed from the calf level more effectively.

Utilizing existing fans

Another option to consider is repurposing fans you may already own. If there is a need for improved ventilation in the calf barn, check to see if there are fans in any other buildings on the farm that are either not being used or are not significantly contributing to that building's ventilation. It is important to know the fan model and output before installing it in the calf barn. A ventilation specialist can make

recommendations on proper fan size and placement in the calf barn.

Innovative curtain adjustment

Many producers open the top portion of the curtain in the spring or fall when they want more air flow into the barn but the weather is still blustery. By opening the top of the curtain, air from the outside will cross paths with the fresh air exiting the positive-pressure tube system. This disruption will carry the fresh air out of the barn before it can ever reach the calf level (see **Figure 3**). Perform a fogging test to help provide visualization of this occurrence.

To correct this disruption, leave the top curtain closed and open the bottom curtain just a crack to avoid a draft. By opening the bottom curtain, fresh air is allowed to flow into the barn at the calf level, and the fresh air from the positive-pressure tubes will travel undisturbed towards the calf level.

In calf barns that utilize top-down curtains, the bottom portion of the curtain can be modified to roll up. This generally involves securing a 2-by-4 in the center of the curtain down the length of the barn. The bottom portion of the curtain can be secured to a metal rod and rolled manually to the base of the 2-by-4. This renovation would cost significantly less than re-installing new curtains and can utilize existing material.

Retrofit individual pens

Calf raisers using solid individual penning may find it difficult to get air flow into the pens at calf level. By removing the solid back of the calf pen and replacing it with an open material like a cattle panel, air can flow through the pen with much less obstruction. Not only will this help introduce fresh air from curtains that open from the bottom up, but it can also facilitate

the exhaust of dirty air confined in that space.

It is best to implement new improvements one step at a time. If multiple changes are completed at once, it will be difficult to assess which changes are effective and which are not. Work with a ventilation specialist to help identify problem sources and clarify areas of opportunity. Making cost-effective improvements can enhance your current ventilation and make a positive impact on calf health until it is economically feasible and necessary to invest in a new system. 🐾



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