



# Glenn's Udderings

By  
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Dairy barns can be a comfortable and healthy place for cows on a hot summer afternoon — that is, if the barn is properly ventilated. Barns provide cows shade, easy access to fresh feed and water plus a clean, comfortable place to lie down and rest.

There are many ways to ventilate tie stall barns, one of which is tunnel ventilation. It works well in narrow barns. In barns that are 36 to 40 ft. wide, four 48 in. fans are installed in one end of the barn, with all the air inlets located at the opposite end; all other air inlets are closed. About 2.5 sq. ft. of air inlet area is needed per 1,000 cfm of fan capacity. With four 48 in. fans that amounts to 200 sq. ft. For

a 40 ft. wide barn, that requires a 5 ft. wide slot across the full width of the barn, or its equivalent. This amount of fan capacity should create about a 3-4 mph breeze and provide 1-2 air changes per minute.

A few words of caution. Be sure to make provisions for ventilating the barn in the event of a power failure! Tunnel ventilation is a good hot weather system; it is not a good year-round system. In cooler weather, when air flow is considerably less, it takes too long for air to move from one end of the barn to the other; cows at the exhaust end of the stable will be breathing more moist, germ-laden air.

If you already have a good exhaust ventilation system with air inlets distributed uniformly around the stable, you can simply add more exhaust fans to increase air exchange to 1,000 cfm or more per cow. Be sure the air inlets are large enough to accommodate this increased flow of air. This system should keep the air fresh, but it won't create as much breeze as the tunnel system described earlier.

Another way to get fresh air and a breeze to cows' head and shoulder areas is to install a pressurized duct over the curb area of the feed bunk or manger. These ducts can be of polytube or rigid construction. They can be placed beneath the stable ceiling if there is sufficient ceiling height, or constructed above the ceiling (ie. in hay mows, on barn floors or in attics) with air being discharged through holes cut in the ceiling.

The ducts should be large enough to accommodate 400-500 cfm of air per cow, and you'll need about 1 sq. ft. of duct cross section area per 1,000 cfm of air. In other words, an 8,000 cfm fan would require 8 sq. ft.; that's a 3.2 ft. diameter tube or a duct that is 2 ft. x 4 ft. or 3 ft. x 2 ft. 9 in. If one 4,000 cfm fan could be placed at each end of the duct, the cross section area of the duct would only need to be half as large; a 2.25 ft. diameter tube or a duct that is 1 ft. x 4 ft. or 2 ft. x 2 ft. would be sufficient. In addition to being able to use a smaller duct, two fans per duct has another advantage; you can run only one fan in cooler weather when less air movement is needed.

In pole barns, the ridge and side walls can be opened up to encourage greater rates of air exchange.

Ideally, the side walls should be opened down to stall bed level. This can be accomplished with curtain walls, removable wall panels, tilt-out panels, etc. Tilt-out panels are more of a maintenance headache, but they can protect stalls along the outside wall from sun and rain. Two inches of ridge vent opening are needed for every 10 ft. of building width, with the minimum width of the opening being 8 inches.

Many farmers have installed circulation fans to create breezes. They do churn up the air but they do not remove moist, stale air and replace it with fresh air. If there is moisture present, the breezes can produce some evaporative cooling.

To create more opportunity for evaporative cooling, cows can be soaked with sprinklers at the feed bunk and then encouraged to stand in a breeze to cool off. The breeze can be natural or fan-generated. If sprinklers are used, provisions should be made for handling excess waste water. If used in enclosed areas, sprinklers tend to increase humidity levels of the area. The increased discomfort caused by higher levels of humidity could erase any benefits gained from evaporative cooling. If used outdoors or in very spacious, well-ventilated feeding areas, sprinklers will have minimal to no influence on humidity levels.

If barns are poorly ventilated, one of the best places for cattle might be outside on a breezy, well-sodded lot. Should you plant trees or erect artificial shades in pastures? Only if you have lots of trees and if the shade is portable. The big concern is, cows will probably crowd under one tree or crowd in the shade area and turn these areas into a mastitis or foot rot cesspool.

Another concern is, when cows are lying in the shade they are not grazing. The goal should be to keep cows dispersed, keep them eating and don't let them linger long in any one spot. In a pasture situation, availability of fresh water may be more important than shade, and if you are looking for portability of water, it could be hauled by tank to individual pasture plots.

Keeping cows comfortable and clean, and keeping them on feed, can pay big dividends.

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