

Well Ventilated Barns Prevent Heat Stress And Improve Air Flow

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EPHRATA (Lancaster Co.) — Dairy profits can be improved dramatically by proper ventilation in tie stall and free stall facilities. As the temperature rises over 70 degrees Fahrenheit, dairy cows reduce feed intake, milk production, and reproductive efficiency.

According to the Ohio State University, ventilation systems serve an important function in dairy barns, maintaining a comfortable animal environment. Typically, a mature dairy cow will breathe out four to five gallons of water per day as water vapor and produce 2000 to 2400 BTU per hour.

Ventilation systems continuously remove heat, moisture, and odors from the barn and replenish the oxygen supply by bringing in drier, cooler outside air. Adequate air exchange also removes gases that can be harmful to both animal and operator health.

The two standard types of ventilation in Pennsylvania dairy facilities are natural and mechanical ventilation. While natural ventilation depends on air movement and natural weather patterns to move air through the building, mechanical ventilation utilizes tunnels, fans, and forced air to improve air quality.

The Hissongs of Mercer Vu Farm in Mercersburg, Franklin County, milk 235 cows with a rolling herd average of 24,750 pounds milk, 805 pounds fat, and 766 pounds protein.

When father Ron and sons Rick and Rod decided to expand their herd from 145 cows three years ago, they decided to build a new naturally-ventilated freestall barn.

"When we built the barn, we never heard a lot about mechanically-ventilated systems," said Rick Hissong, one of two sons working on the family farm. "We relied heavily on Penn State cooperative engineer Dan McFarland's advice to build our barn."

The barn was built with 14-foot sidewall openings and a 36-inch wide by 36-inch tall open ridge at the peak of roof.

"The barn was designed with the goal of maximizing production and controlling costs," said Hissong. "When we look into the future, our next goal is to expand so that this farm can ship a tractor trailer load of milk a day. The barn was designed with that in mind."

According to Hissong, a primary consideration when building a naturally ventilated barn is its location. "We're sitting up on a hill, so there is always a nice breeze going through the barn, even during the hot summer months," said Hissong. "If you were sitting down in a valley, a naturally-ventilated barn might not work as well."

Before building the barn, the Hissongs used to see milk production drop anywhere from 15 to 20 pounds during the



Rick and Rod Hissong of Mercer Vu Farm use natural ventilation to keep their cows cool and comfortable year-round. The naturally-ventilated freestall barn helps maintain milk production during summer months.

summer. "Now we only see at most a five to seven pound loss during the hottest months," said Hissong.

The barn is equipped with five-foot curtains that are used during the wintertime, but Hissong said that they are rarely put up all of the way. Even when the curtains are completely closed during the coldest months, there is still a sixteen-inch airflow opening.

Slotted floors allow manure to flow in channels under the barn and away from the cattle. 36-inch diameter fans are spaced every 36 feet in the barn.

The only downside of the barn is that rain occasionally will come in the open ridge roof and fall in the center of the feed alley.

"That doesn't bother me in the least," said Hissong. "I like the complete openness of the open ridge. If I had it to do over again, I would build the barn basically the same way."

"The air quality in this barn is very good," said Hissong. "When you walk in here, it doesn't smell like a dairy barn."