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Seven Things That Can Improve Cow Comfort, Productivity & Well-Being

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- ✓ Improve the air exchange
- ✓ Provide relief from heat stress
- ✓ Increase bedding amount & frequency
- ✓ Increase stall & alley cleaning frequency
- ✓ Don't overcrowd groups
- ✓ Improve access to feed & water
- ✓ Make more space available for 'special cows'

Improving the Air Exchange

“We are coming rapidly to understand that we have got to furnish pure air to our cows.”

– W.D. Hoard, 1885.

An air exchange is necessary to control the levels of moisture, gases and other pollutants. An inadequate air exchange leads to wet, smelly conditions that compromise animal health and productivity. Providing a season appropriate air exchange allows fresh, dry air to enter the animal space; controlling pollutant levels and creating a healthier environment.

“If it smells like a barn you need better ventilation.” – R.E. Graves, 1996

Mechanical ventilation systems rely on fans and properly sized inlets to develop a pressure difference between the inside and outside of the animal space to create the necessary air exchange. Seasonal air exchange rates typically vary from 50 to 1,000 cubic feet per minute (cfm) per cow, so multiple fans, adjustable inlets, and reliable controls are necessary to insure desired performance.

Natural ventilation systems rely on wind and animal heat – primarily wind – to drive the air exchange. Typically, the more openings available to allow fresh air in and stale air out the better the air quality in the animal space will be. Naturally ventilated shelters provide protection from cold winds and precipitation during cold weather, and offer shade and cooling breezes in warm weather. Increasing sidewall, end wall and ridge openings will help facilitate an adequate air exchange.

If natural ventilation is challenged by topography, building design, and/or obstructions strategically placed exhaust or pressure fans may be necessary to improve air exchange and distribution. Circulation fans DO NOT exchange air! They provide air movement over the cows increasing their ability to get rid heat, but do very little to remove moisture and pollutants from the animal space.

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Provide relief from heat stress

“Milk production and reproductive efficiency is reduced by heat stress in dairy cattle caused by high ambient temperatures within all ranges of humidity.” – D. Armstrong, 2000

Productive dairy cows can begin to experience heat stress when the temperature humidity index (THI) is as low as 68. Signs of heat stress in dairy cows include increased body temperature (>102°F), increase respiration rate (>80 breaths/min), and decreased dry matter intake, followed by observed milk production decreases of 10 to 25%. In addition, heat stressed cows are less likely to display estrus and conceive, resulting in longer calving intervals and multiple services.

Relief from heat stress for dairy cattle can be achieved by reducing the heat exchange from the environment to the cow, and/or improving the heat exchange from the cow to the environment. Heat stress abatement for dairy cattle begins with providing shade, air, and drinking water. Shade reduces solar exposure. A good air exchange helps remove heat and reduce moisture, gas, and pollutant levels. Forced air movement improves convective heat transfer and speeds evaporation of moisture from the skin. Providing good access to drinking water is also important since intake can increase significantly as the temperature rises.

Evaporative cooling, both direct and indirect, can also improve hot weather comfort. Three methods popular with dairy producers include spray cooling, high pressure misting, and evaporative pads. Evaporative cooling can improve hot weather comfort, but it also increases relative humidity in the building. Therefore, good ventilation is necessary to prevent excessive moisture build up.

Spray cooling is a ‘direct’ evaporative cooling method typically used in holding areas and along the feeding area in freestall shelters. Water is sprayed intermittently to wet the cow’s skin, and moisture is evaporated using the heat from her body. Forced air movement around the cows enhances the evaporative process. Studies show the respiration rate of heat stressed cows is reduced significantly immediately after the first wetting cycle. Additional applications bring the respiration rate closer to normal.

‘Indirect’ evaporative cooling systems, such as evaporative pads and high pressure misting, use latent heat from the surrounding air to evaporate moisture, lower dry bulb temperature. Commonly used in tie stall barns with tunnel ventilation systems, they can lower temperatures in the animal area 5 to 15°F depending on incoming air conditions.

Increase bedding amount and frequency

“No farm ever went broke buying bedding.” – Unknown

No matter what type of bedding is used, increasing the volume used and applying it more frequently generally results in improved comfort, cleanliness, and reduced injuries. Bedding materials help keep the resting surface dry, provide cushion, and reduce abrasions. Generously bedded stalls typically require 4 to 8 inches of bedding to provide adequate cushion and comfort for dairy cows. Manufactured stall beds – mattresses or mats – do not REPLACE bedding; they simply REDUCE the total amount of bedding necessary to keep cows clean and comfortable.

Remove soiled areas from stalls at least three times per day. Producers that remove bedding from the rear half of the stall and apply an ample amount of fresh bedding daily are pleased with the improved cleanliness and reduction injuries and udder health problems. The total amount necessary varies with the season and weather conditions. The proper amount and frequency combination is the one that achieves the desired results. Not convinced? Try one group and compare the results for yourself.

Increasing stall bed and alley cleaning frequency

“Removing filth takes care of a lot of problems.” – J. Simms, DVM

Manure and urine collected in alleys causes a number of concerns including: being tracked into stalls, soaking switches of resting cows, manure splatter on legs and udders, slippery walking surfaces, and increased for foot problems.

More frequent alley and stall bed cleaning – even one more per day - improves cow cleanliness, offers more confident footing, and improves air quality. Combined with a proper air exchange, more frequent cleaning will make the animal area a nicer place work for cow and caregiver.

Don't overcrowd groups

“High producing cows rest 10 to 14 hours per day.” – Albright & Arave

More with less sounds enticing, but excessive overcrowding dairy cow groups may create problems. As a group cows display cyclical feeding and resting behavior. Studies indicate – with good management - overpopulating up to 15% may be acceptable. But higher rates can lead to increased feeding aggression, excessive standing, poorer air quality, heat stress, and dirtier conditions.

Overcrowding lactating groups create overcrowded dry cow and maternity areas that may cause increased freshening disorders and poorer performance in the following lactation. Cow comfort, health and well-being – not just total pounds of milk - should determine the success of overcrowding any cow group.

Improve feed & water access

“Cows and feed should be available to each other at least 21 hours per day.” – R.E. Graves

Cows may eat 10 to 12 meals a day spending up to six hours consuming feedstuffs, so having feed available to cows – and cows available to feed - is essential. Excessive time spent in the milking center, empty feed tables, and feed out- of-reach all compromise dry matter intake. If the feeding area cannot accommodate an entire group at once, diligent feed delivery and push-back is even more important to keep feed within reach – to all cows at all times.

Cows typically get thirsty soon after eating and after being milked and should not be away from drinking water more than an hour at a time. Provide multiple water stations large enough to allow 10 to 15% of the group to drink at the same time, and located in a convenient path between feed and resting areas.

“Cows should be within 50 feet of drinking water.” – J. Spain

Make more space available for ‘special’ cows

“The handling of ‘special cows’ is one of the main areas separating top from mediocre dairy operations.” - B. Stone, 2000

Some claim the most important stage of lactation is minus 60 days in milk. If so, dry, maternity, and post-fresh cows require ‘special’ attention to their environment to minimize stress. Typically 30% more space than required for ‘uniform’ scheduling is need to accommodate periodic overcrowding, improve cleanliness, and reduce stress.

Summary

Cow comfort is an important component of good animal husbandry. There are several ways to improve air quality, resting area comfort, and relief from heat stress – NOW – to help increase production, improve health, longevity, and profitability. An investment in improved cow comfort is money well spent.

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