

Improving and Maintaining Cow Comfort



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Cow comfort is often listed as one of the most important aspects associated with getting dairy cows to milk to their genetic potential economically. Cow comfort involves not only providing a comfortable resting place and surface for cows, but also providing for proper ventilation within the facility to minimize heat stress, prevent condensation of moisture, and allow for good air quality, i.e. low ammonia concentrations.

Optimize cow rest

Cows spend 10 to 14 hours daily lying down, representing almost half of their day, and prioritize this behavior over others, such as eating. Thus, when lying times are restricted as can occur with increased stocking density or uncomfortable resting environments, performance (reproductive, production, health) or chances of being culled may be negatively affected. Research has shown a minimum of a 40-hour recovery time is needed for cows previously deprived of lying times by 2 to 4 hours.

For optimum performance of individual cows, stocking densities (number of cows per stall or 100 sq ft bedded pack) should be kept close to 100%. However, stocking densities are often increased to 120% to increase returns per group of cows. Recommended maximum stocking densities are dependent on milk price, returns per cow, barn costs, and stage of lactation and production of cows within the group. Fresh cows should never be crowded as stresses decrease their chances of becoming pregnant later. In facilities with high stocking densities, cows will wait for an available stall (especially from early morning till 4 AM) and upon return from milking they immediately lie down to ensure they get a stall. Thus, feeding times may be reduced and time spent eating may be more rushed with the potential for a sub-optimal rumen environment which can negatively affect milk production and butterfat test.



Stall Surfaces

Stall surfaces (i.e. mattresses or rubber mats versus sand) also impact lying times. Sand bedded stalls are generally considered the “gold standard”. Deep-bedding stalls with sand reduces hock injury, provides better cushion and traction when rising and lying, reduces lameness, reduces standing time in stalls, and increases lying times. However, like any stall surface, they must be properly maintained. Deep beds of sand, 12 to 18 inches of sand on top of an earthen or limestone base, need to be groomed at each milking to removed soiled sand and manure and to keep the bedded surface level. New bedding (20 to 80 lbs sand/stall/day) should be added twice weekly. Although retrofitting barns is complicated and may not be feasible, stall length does impact stall usage and lying times. Today’s cows are larger compared to previous generations of dairy cows seen when many barns were built.

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With mattresses or stall mats, the use of adequate amounts of bedding on top of the mattresses or mats is important to keep cows dry and “clean”, to prevent hock and knee injuries, and to minimize negative impacts on lying time. Studies have shown that cows prefer “clean”, dry stalls over those that are wet and soiled with manure. Mattresses should be bedded with 3 inches of sawdust. Studies in tie stall barns with as little as 1 inch of bedding on top of rubber mats saw increased lying times by 72 minutes per day and found a 25% reduction in hock lesions and knee injuries. (With the FARM program, 95% or more of the lactating cows need to have hock and knee scores of 2 or less.) Rubber mats vary in the amount of cushioning provided and have limited life expectancies and should be replaced when cushioning benefits are compromised.

Fresh Air Exchange Is Important

Proper ventilation in barns is important for removing heat, moisture and noxious gases (i.e. ammonia) and is accomplished when fresh air enters the barn from outside. This is different from recirculation of air achieved with fans. Box fans move air within a barn and do not bring in fresh air from outside. Properly sized and designed open ridges, correct barn orientation (east-west orientation or a direction perpendicular to prevailing summer winds) and effective use of the side curtains on each sidewall in the winter are needed to allow fresh air to enter a naturally ventilated barn and for heated air to exit through the ridge opening. In the winter, the eave openings at the top of each sidewall curtain should be open equal to half the width of the ridge opening. Ventilation is just as important in the winter as in the summer. Generally speaking, air exchange rates during the winter should occur at least 4 times per hour and should increase to 40 to 60 times per hour during the summer under high heat loads where the side curtains are completely open.