

Article by:



Alice E J Miller

Friars Moor Livestock Health, an XLVets Member

Vet Viewpoint

Focus on these six key areas to improve your dairy housing environment

The productive dairy cow is more likely to achieve her genetic potential when allowed to thrive in the best environment. Reviewing the dairy housing environment on your farm may highlight areas that need improvement. The following six key areas should be considered. By acting on a few key points it is possible to significantly improve dairy cow welfare and productivity.

Light levels:

The level of light exposure at certain production stages has been found to have beneficial effects on milk production. The documented research findings reflect what we see in practice. A long photoperiod (18 hours of light) compared to a natural photoperiod has been shown to increase milk yield in lactating cows ¹ by an average of 2 litres per day. However, shorter day lengths are recommended for dry cows. Reduced light hours (8 hours of light) during a 60 day dry period has been shown to increase milk yield in the following lactation period ² by 3.2kg per day ³.



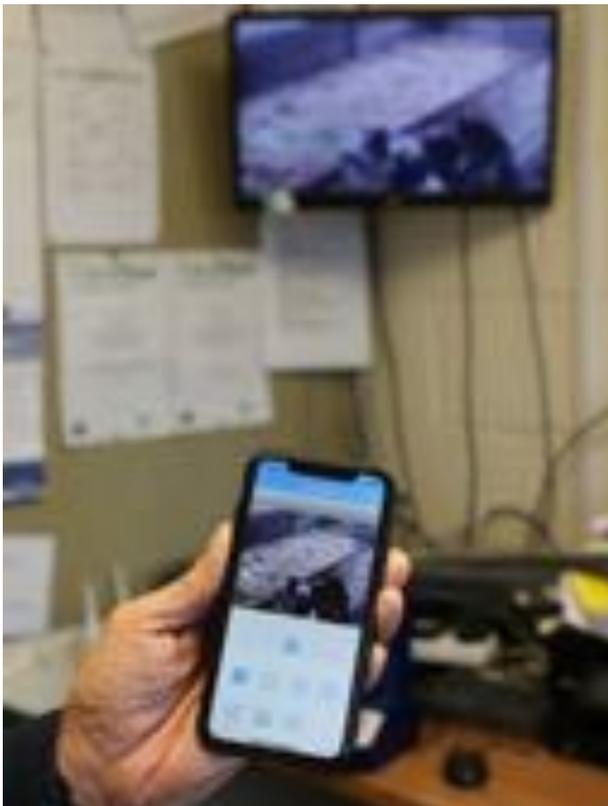
Adjustable light and ventilation levels

Light levels within the shed should be at least 200 lux during the day and in periods of darkness levels should not be less than 30 lux to ensure cows can still see to move around the building ⁴.

The best buildings expose cows to maximum natural day light levels as well as having the option of ample artificial LED lighting, so light levels can be adjusted accordingly. But it is worth considering that where sky lights are used to increase day light levels, ambient temperature can also rise, so there should be fewer skylights on south facing elevations to avoid this “greenhouse” effect.



Unrestricted air inlets and outlets, with adjustable gale breakers to adapt to daily conditions



Live camera images can be viewed on the screen and mobile phones to improve surveillance

Surveillance:

There has been a rise in the use of surveillance cameras on farms, with features that allow 360° views, ability to zoom and night vision. These are becoming invaluable tools in calving areas. Remote surveillance avoids stressful disturbance that can delay the natural onset of calving. Equally, unnecessary calf losses can be avoided with earlier intervention and assistance where cows are seen to be experiencing difficulties.

Cameras can also be useful in other areas around the farm to monitor stock behavior for example they can be put in collecting yards to help with oestrus detection.

Hygiene:

Adult cattle can shed high levels of bacteria such as Johne’s, Salmonella and E. coli, viruses such as Coronavirus and Rotavirus and parasites such as Cryptosporidium in their faeces. It is therefore important that sick cows are not left in calving pens, since levels of contamination can increase quickly and any calves inhabiting the pen will be at risk of infection. Often calving pens are seen to be situated close to the collecting yard or parlour where they become contaminated with slurry or effluent run-off which is another source of infection for calves. It is important that calves are not left in the calving pens for too long to help minimise the risk of infection occurring.

Calving pens should be regularly cleaned, organic matter removed, and fresh dry bedding replaced. When a deep clean is carried out pens should be steam cleaned and allowed to dry, the use of hydrated lime can speed up this process. Detergents will help remove engrained dirt and biofilms where a multitude of pathogens can survive for months. Disinfectants should be used after detergents at the specified dilution rate and allowed to work for the correct length of time ⁵.



Enrichment activities are used to help stimulate play within the shed

Enrichment and space:

More farms are exploring the idea of offering enrichment activities for adult cattle and youngstock. Brushes for cows and calves are in constant use when seen on farm visits, but other novel ideas offer opportunities for play, such as punch bags, tractor tyres, hay bales and padded posts. It is important that the housing layout allows cows to avoid bullying, with additional space for social and locomotive play.

Comfort:

Cow comfort has significant impact on welfare and health. Cows that spend at least 12 hours per day with a dry and comfortable place to lie will be happier plus, with the reduced mastitis and lameness risks they will be healthier too.

Whether loosely housed or in cubicle sheds, there should be allowance for extra lying space, to give cows the choice of where to rest. The bedding substrate should be at least 6 inches deep to ensure cows are comfortable, avoid hock lesions and reduce cubicle refusals.

The use of rubber matting at feed faces, collecting yards and in the parlour have been found to reduce levels of lameness on farm, but where cubicle dimensions do not meet comfort standards cows may preferentially lie on rubber mats instead.



Adjustable gale breakers to ensure the building is optimally ventilated in all weather conditions

It is important that floor surfaces are not slippery and regrooved regularly to avoid cow injuries and encourage confidence to display bullying behavior safely.

Heat stress:

The effect of heat stress on cattle has been well documented. The upper critical temperature (UCT) of adult cattle is 25°C⁶ and once this is exceeded cattle are at risk of heat stress. It is important to consider that the UCT is even lower when humidity levels increase. Heat stress is a welfare issue but will also have detrimental effects, including, reduced dry matter intake, milk yield reductions by as much as 20%, poor fertility, increased embryonic loss and a rise in clinical mastitis⁷.

Heat stress can be avoided by ensuring buildings are well ventilated, with unrestricted air inlets and outlets. Where there is not enough natural ventilation, mechanical ventilation systems should be considered. Buildings that work best are those where you can control ventilation to suit daily temperature, humidity and wind speed changes, to ensure cows can always avoid thermal extremes. Placing fans in areas where cattle are grouped and natural ventilation may be restricted, such as, the collecting yard and parlour should also be considered and can make a huge positive difference for the cow.

It is also important to consider that during temperature rises a cow's water intake requirement may increase by 10–20%, with lactating cows requiring 100–130 litres per day⁷. It is critical that trough space therefore allows for this increased demand, to best support the cows.

In summary, changes do not need to be expensive, however, a few simple, practical changes can make all the difference to the health, welfare and productivity of your herd.

As Featured in Farmers Weekly



References:

1. Dahl, G. E., Elsasser, T. H., Capuco, A. V., Erdman, R. A. & Peters, R. R. Effects of a Long Daily Photoperiod on Milk Yield and Circulating Concentrations of Insulin-Like Growth Factor-I. *J. Dairy Sci.* **80**, 2784–2789 (1997).
2. Aharoni, Y., Brosh, A. & Ezra, E. Effects of heat load and photoperiod on milk yield and composition in three dairy herds in Israel. *Anim. Sci.* **69**, 37–47 (1999).
3. Miller, A. R. E., Erdman, R. A., Douglass, L. W. & Dahl, G. E. Effects of photoperiodic manipulation during the dry period of dairy cows. *J. Dairy Sci.* **83**, 962–967 (2000).
4. Agriculture and Horticulture Development Board. 14 | Light. *Dairy Hous. a best Pract. Guid.* 72–77 (2012).
5. Robertson, J. Hygiene for youngstock. *Livest. Manag. Syst. Ltd.* (2019).
6. Berman, A. et al. Upper critical temperatures and forced ventilation effects for high-yielding dairy cows in a sub tropical climate. *J. Dairy Sci.* **68**, 1488–1495 (1985).
7. Ohnstad, I. Managing heat stress in dairy cows. *NADIS* **7**, (2008).

Photographs taken by Alice Miller with thanks to Hinton St. Mary Farms and Perry Farm.



For further information please visit our website
www.xlvets-farm.co.uk