

Lameness Control in Dairy Herds

Part 7 - Cubicle Comfort

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Cow comfort is fundamentally important for foot health, but also has implications for:

- Cow wellbeing.
- Productivity.
- General herd health.
- Cow longevity.

Whilst at first sight comfort issues such as hock damage may appear to affect small numbers of animals within the herd, animals that fail to cope reflect the 'tip of the iceberg', with the rest of the herd coping but at a hidden cost. Crucially, when it comes to cow comfort the most vulnerable animals tend to be the heifers (the future of the herd) and the lame, which often 'get lame and stay lame'.



Fig 1: Cow comfort is important for cow longevity and productivity

Assessing significance

Poor lying comfort is a major risk factor for lameness, in particular sole ulcers, sole bruising, under-run horn and white line. If yards are contaminated with slurry, prolonged standing may well have an influence on slurry heel and skin disorders such as digital dermatitis. Cows lying out in the passages, lying half-in-half-out and becoming stuck in cubicles are clear indicators that changes are needed.

While all of the above indicate a cow comfort issue, perhaps the best measure of lying comfort is the 'cubicle standing index CSI'. This is defined as:

'the proportion of cows touching a stall that are standing with all four feet on the cubicle platform or perching with the front two feet in the cubicle and the rear two feet in the alley'

To be most representative, CSI should be measured two hours before milking, at which time the index should be less than 20%, and the best herds consistently achieve less than 10%. (Fig 2) However, the index is most useful for monitoring the impact of improvements over time.



Fig 2: On this farm there were two cows stood in the cubicles for every twenty-two lying down. Cubicle Standing Index = 9%

Diagnosing problems

Observing and examining the cows in the cubicles is the only way to identify comfort problems. Cubicles should be designed to provide comfort for the largest cows in the herd, not the average cows. Lying position should be determined by a brisket board, that rises no more than 10cm above the bedding. Even with this, some dung on 10% of cubicles must be expected and will do little harm if regularly cleaned off.



Fig 3: Hock swelling and hairloss indicates hard beds and abrasive bedding.

On most farms the main priorities are:

(1) **Cubicle access.** There should be at least 5% spare cubicle positions, but this needs to be higher for vulnerable animals or if cubicles vary in comfort or if accessibility is poor (blind alleys). Accumulations of slurry in one alley and cows queuing for spare cubicles will indicate a preference that needs equalising. The presence of a bully cow, kerb height (ideally about 16cm) and neck rail position (see fig 6) will determine whether cows can enter into a chosen cubicle.

(2) **Bed comfort and cushioning.** The biggest barrier to a cow lying down soon after entering a cubicle is the comfort of the lying surface. Research would suggest deep sand offers excellent cushioning and grip. However, other materials can achieve this. Deep bedding will keep cows cleaner/drier, be more inviting and provide cushioning. Hock swellings (fig 3) indicate the beds

are too hard. Hock sores would suggest the beds are too abrasive.

(3) **Cubicle divider design and positioning.** Cows show a clear preference for wider cubicles and high neck rails, reflecting their fear of striking these as they lie down or rise, roughly 12 times per day. Lying times can be influenced by design, with variations on the 'European supercomfort' offering best comfort. Neck calluses, rib swellings, stifle hair-loss and back swellings as well as observed knocks indicate a need for alteration.

(4) **Cubicle length and lunge space.** Typical Holstein-Friesian requires 1.7m bed length and a further 1m of forward lunge space. A cubicle divider design that allows side lunge space will help cows if a cow is occupying a cubicle directly in front of her.



Fig 4: The supercomfort design offers borrowing space, forward lunge space, bob space and side lunge space



Fig 5: A cow requires approximately 1m of forward lunge space, and bobs the muzzle to the ground on rising, to create a counter balance for the rear quarters. Without this, more force goes through the hock

The following interventions appear to be extremely cost-effective:

- **Cubicle access**
 - Cubicles are not ideal for vulnerable animals. Therefore, straw yard ('comfort groups') for fresh calved cows, heifers and lame cows are best.
 - Low stocking rates (more than 10% spare cubicles).
- **Bed comfort and cushioning**
 - Conversion to deep bed sand system.
 - Increase use of bedding, being mindful of mastitis risk.
 - Change type of sawdust to reduce hock abrasion- a mixed grade, kiln dried sawdust, containing dust and shavings appears to be best. It also tends to be self-cleaning on mattresses, preventing abrasive crust formation with milk leakage.
- **Altering divider position - see fig 6 below.**

- **Length and lunge space - removal of walls in the lunge space**

Once a problem has been identified, it is often worth trialling a change on one or two rows of cubicles first. Often the preference for the changed cubicles will be seen within 1-2 weeks, confirming the change should be made on all the cubicles as soon as possible.

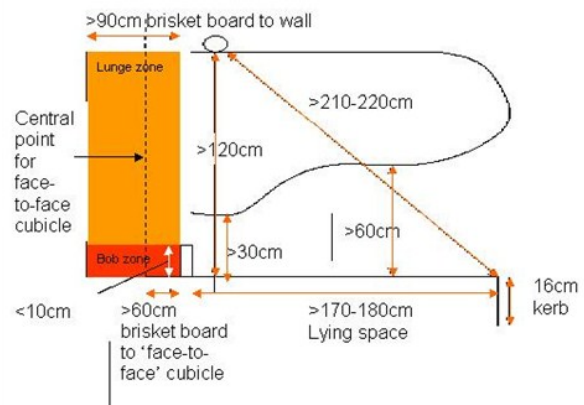


Fig 6: The above cubicle dimensions are a guide for a typical Holstein-Friesian dairy cow. Some designs can be easily adjusted e.g. by raising or lowering the divider, tilting the divider or spreading the bottom rail from the top rail with a trailer jac

Even with the best cubicle comfort possible, it is probably wise to train heifers to use cubicles in the rearing period and introduce cubicles gradually at winter housing, monitoring for rejection. A straw yard should always be available for lame animals or those that reject cubicles.

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