Lactanet – Canadian Network for Dairy Excellence

The importance of the feed bunk in free-stall housing – Part 2

Steve Adam
Agr., Dairy Production Expert – Comfort and Welfare
Lactanet

Last month, we highlighted the importance of the feed bunk design for the welfare of farm animals of all ages. We now know that the repercussions of a poorly designed feed bunk include, among other things, neck injuries, lameness and sub-standard body condition among animals. In this follow-up article, we will provide recommendations and best practices to help you make the most effective decisions for your farm and your herd.

PHOTO BY ANDRÉE-ANNE GINGRAS, AGR., STRAT. ADVISER, LACTANET

A 15-20% inclination of the headlock will facilitate access to food.

A FEW RECOMMENDATIONS

Space

An experiment done by Lactanet at McGill University's Macdonald Campus Farm determined that the overall width of a Holstein cow exceeds 76 centimetres (30 inches) (Figure 1). Hence, lactating cows should be allowed at least 60 centimetres (24 inches) of linear bunk space per cow (Table 1), under the assumption that one in four cows does not have access to the feed bunk.

For dry and fresh cows, the recommended space allowance is at least 76 centimetres (30 inches) per animal, and the optimal allowance for transition cows would be 90 centimetres (36 inches).

Feed bunk design

The bottom of the feed bunk should be 10 to 15 centimetres (4 to 6 inches) higher than the height of the cows' feet. The surface of the feed bunk should also be acid-resistant and smooth to facilitate cleaning. Producers who are not equipped with automatic feed pushers may use shallow feed bunks (1 to 3 inches deep) to keep the feed close to the animals. It is also important to clean the feed bunk regularly to remove any feed trapped in the corners.

Height of the manger curb

The recommended curb height depends on whether or not headlocks are used. It is also based on the clearance that cows require to avoid brisket injuries and comfortably access feed. Obstacles higher than 20-22 inches (51-56 centimetres), i.e., roughly a third of hip height (HH), should be avoided. This formula is useful when it comes to determining the appropriate curb height for replacement animals or for dairy breeds other than the Holstein. For replacement animals, the height of the curb should accommodate the smallest animals in the group. In practical terms, when pouring the concrete for the curb, it is important to take into account the thickness of the horizontal bar if headlocks or slant bars are to be installed. The edges of the curb should also be rounded to avoid injury.

Feed barriers

Studies have found no differences in feed intake or milk production between the different types of restraints (rails versus headlocks). Nonetheless, subordinate cows seem to benefit from a physical barrier separating them from dominant cows. Cow displacements were reduced by 21 per cent less when headlocks were used as opposed to a post-and-rail barrier. Cows also spent less time standing inactively in the feed alley, which may decrease the risk of lameness.

When installing headlocks, ensure that the top bar is higher than the height of the cow's back to avoid neck injuries. For replacement animals, adjust the bar for the tallest animals in the group. Likewise, a slope of at least 15 to 20 per cent (20 centimetres or 8 inches) will ensure easier access to feed.

Figure 2 & 3

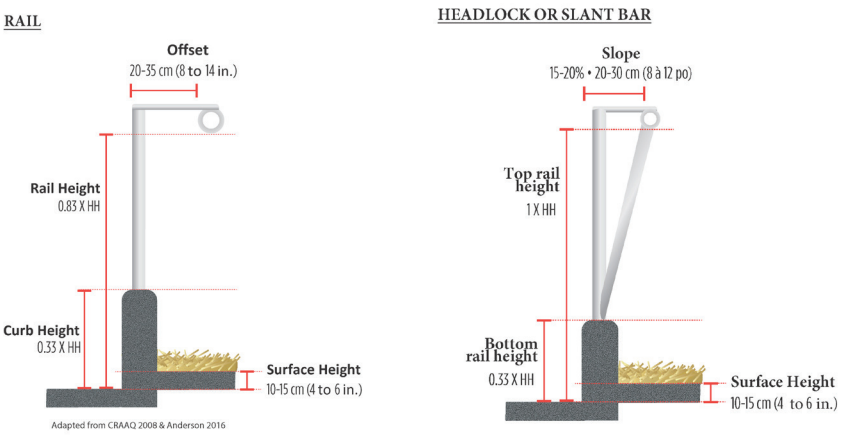
Standard commercial headlocks are generally 60 or 76 centimetres wide (24 or 30 inches). When using 60- centimetre (24-inch) headlocks, it is normal that some spaces remain vacant (one out of five) because the cows are wider than the openings. The important thing is to make sure the feed bunk is long enough for the number of animals present.

The height of a rail barrier should be around 110-125 centimetres (45-50 inches). To avoid neck injuries, the rail should be offset over the manger by 20 to 35 centimetres (8 à 14 inches) from the inside of the curb on the cow side. Pushing feed up frequently also reduces the pressure on the cows' necks.

Conclusion

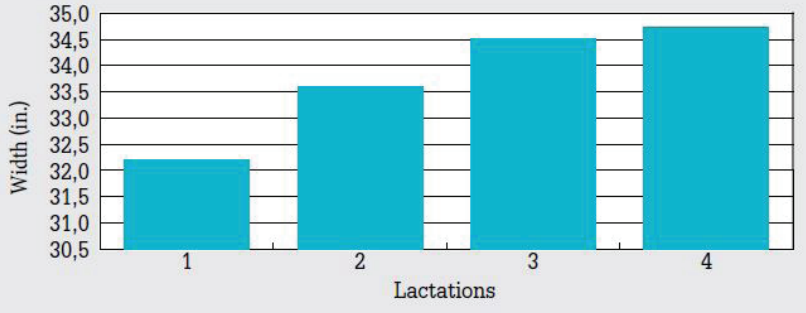
There are many aspects to consider when designing a feed bunk for dairy cattle. Different GROUPS of animals have different requirements. A well-designed feed bunk can make a big difference in ensuring healthy and productive cows.

FIGURE 2 & 3



Adapted from CRAAQ 2008 & Anderson 2016

FIGURE 1 : AVERAGE WIDTH OF HOLSTEIN COWS IN RELATION TO THE NUMBER OF LACTATIONS



Santschi et coll. (2014)

TABLE 1: BUNK SPACE RECOMMENDATIONS FOR DIFFERENT GROUPS OF COWS IN THE BARN

ANIMALS	SPACE ALLOWANCE PER HEAD (HOLSTEIN)
Lactating Cows	60 cm (24 in.)
Dry Cows	76 cm (30 in.)
Transition Cows	76-91 cm (30-36 in.)
23 months and over	76 cm (30 in.)
19 to 22 months	60 cm (24 in.)
13 to 18 months	50 cm (20 in.)
6 to 12 months	45 cm (18 in.)
Under 6 months	All eat simultaneously

Adapted from CRAAQ 2008 and Anderson 2016.