

Improving Cow Comfort through Proper Neck Rail Placement

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Lying behavior plays a critical role in the production potential, profitability, and well-being of dairy cattle. Dr. Rick Grant (Miner Institute) suggests that productive dairy cows require 12 to 14 hours of lying or resting time per day. Research has demonstrated that depriving cows of adequate lying time may result in physiological and behavioral stress, increased lameness, altered feeding behavior, and reduced milk yield. The amount of time a cow spends lying is influenced by many factors including facilities, management, and the physiological status (i.e. days in milk, milk yield, pregnancy status) of the animal. In managing dairy cows, we need to do everything we can to ensure that cows have the opportunity to fulfill their lying time requirements. The first step in this process is making sure cows always have a comfortable place to rest. Obviously, in a freestall barn, freestall design and dimensions are essential components of this comfortable resting place. Contrary to popular belief, this does not mean you need to tear down your existing freestall barn to improve lying time in your dairy herd. Many dairy herds could observe dramatic improvements in lying time by making some minor, relatively simple changes to existing freestalls.

As I have travelled across Kentucky these past few months, I have noticed quite a few herds with cow comfort limitations related to improper neck rail placement. The neck rail helps position the cow when she enters the stall or when she is standing in the stall before or after standing up. Additionally, the neck rail helps encourage cows to preserve lunge space and defecate in the manure alley. One way we can evaluate neck rail placement is by observing cows for perching behavior. "Perching" refers to the behavior when cows stand with their front feet in the stall and their rear feet in the alley behind the stall (Figure 1). Generally, this behavior indicates improper neck rail placement. If neck rails are too low, cows may also be hesitant to enter the stalls and have difficulty standing up. When the neck rail is in the proper position, cows will stand with all four feet placed squarely within the stall, level backs, and the top of their necks gently touching the neck rail (Figure 2).

For large-frame dairy cattle, the distance between the top of the stall bed (including bedding) and the bottom of the neck rail (also referred to as neck rail height) should **be 48 to 52 inches**. The horizontal distance from the alley side of the rear curb to the neck rail **should be 68 to 70 inches**. Early freestall designs recommended a much shorter neck rail height; however, experience and research have shown that these older recommendations were wrong. Unfortunately, many existing freestalls were built according to these older guidelines creating the need for modifications now. In many situations, the neck rail can be moved without any major modifications. Dairy producers should use their engineering ingenuity to determine the best modification for their facility. Wisconsin researchers (Fulwider and Palmer, 2004) demonstrated that the percentage of stalls with cows lying in mattress based freestalls was significantly higher with a 50 inch neck rail (51.4%) when compared to stalls with a 45 inch neck rail (40.0%). So, dust off that tape measure, walk out into your freestall barn, and determine where your neck rail is placed. If you find the measurements are outside of the recommendations above, consider modifications to improve cow comfort and stall usage within your freestall facility.



Figure 1. An example of "perching" with cows standing half in and half out of stalls. Perching may indicate that the neck rail should be moved.



Figure 2. An example of well-designed freestalls. Notice that most cows are lying down and the two cows that are not lying are standing with their four feet squarely placed in the freestall.