

Where are the milk bandits on your farm?

Steve Massie for *Progressive Dairyman*

Several research studies say that for every extra hour our lactating cows lie down in a 24-hour cycle, they produce about 3 extra pounds of milk with similar dry matter intakes. This milk is basically free or at least results in mostly income with very little expense. This happens as a result of changes in a cow's energy requirements, hormonal responses and rumen functions. Can you find another hour per day of lying time that your cows can use to produce this extra 3 pounds of milk?

When I consult producers on farms, I typically start with the cow's daily time budget. Excess time traveling to and from parlors, spending extra time in holding pens and slow parlor throughput can all rob the cows of this extra hour. Moving high-producing cows closer to the milking center, reducing pen or milking group size to reduce holding pen times and examining current milking procedures and udder preparation may reveal hidden time when those cows could be lying down instead of standing around.

Overcrowding

Research says that maximum lying time is achieved at nearly 100 percent stocking density or one cow

per stall. Overcrowding cows by just 10 percent reduces lying time by 1 hour per day. At 130 percent stocking density, lying time is reduced by 2 hours per day. Because cows can spend 12 to 14 hours a day lying down, and their behavior patterns are such that they all want to lie down at the same time, it is no surprise overcrowding hurts lying time so drastically.

Bedding

Wet bedding is also a huge deterrent for cows to maximize lying time. Research has found that cows will reduce their lying time by as much as five to eight hours per day when the bedding is wet. I have seen this with open lots, freestall barns and a tiestall barn that was in desperate need of a good plumber.

Bedding characteristics can also impact cow lying times. Cows like deep bedding, whether it is sawdust or sand. Cows become accustomed to the type of bedding they have. I have seen farms where different bedding is used in different parts of the barns, usually because of manure-handling capabilities. Cows coming off sand bedding prefer sand bedding. This is true for sawdust, mulch, paper, lime and recycled compost bedding. Keeping the bedding material



consistent in the facility will maximize lying time. Bed with at least 12 pounds of material per stall; do not be stingy with bedding. Remember, it is another 3 pounds of milk for every extra hour of lying time. Research has shown that 16.5 pounds of sawdust bedding per stall versus 2.2 pounds of sawdust

bedding resulted in an extra 1.5 hours per day of lying time.

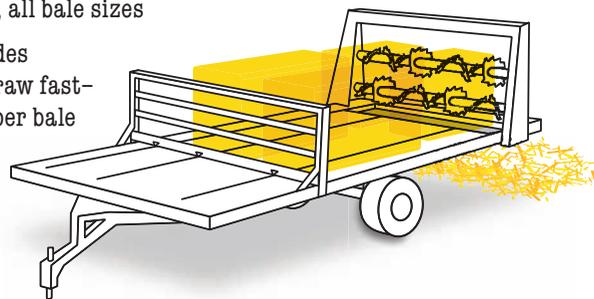
I also like to bed the cows multiple times a week. I challenge producers to try doubling their current bedding frequency and see what the cows tell them. You may not need to increase the amount of bedding, just more

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distribution times. Research has shown that sand bedding just 2 inches below the curb results in an hour reduction in lying time. I see similar improvements in open lots when pens are well groomed with a good 4 to 6 inches of fluffed, dry bedding up under the shaded areas. An extra 3 pounds of milk will easily cover pen-grooming labor and machinery cost.

Stall design

With respect to facility-related limitations to lying time, bad stall design is probably the biggest culprit I find on dairies today. I use the rule of thumb that not more than 10 percent of the cows occupying a stall should be standing in stalls or perched (two front feet in a stall). I say "on average" because normally two hours after milking is peak lying time, and cows just presented with new feed will have substantially lower stall use. So count five or six times a day and use the average.

I think 10 percent is a good average because there are always some cows that just stood up to reposition themselves, other cows that just walked into the stall and have not laid down yet, or the boss cow just laid down nearby and the subordinate cow stood up trying to decide whether to run away or lie back down. If more than 10 percent are standing, you'd better look hard at your stall design, especially if heat stress or undesirably high lameness prevalence are also present and adding to this percentage.

I am constantly challenging my producers to stand in their freestall barns, close their eyes and listen. Cows getting up and down in freestalls should not be creating stall noise. If you stand in most freestall barns, you hear creaking, clanging and thumping as cows contact metal freestall loops and neck rails. Now open your eyes and tell me where the shiny spots are on those freestalls – that metal bar only gets that shiny and polished with cows continually rubbing hard against that spot. Should she be rubbing there at all? Is this a sign you have stall design issues? I think so, and I also think where that polished spot is tells the producer where the stall needs to be fixed first.

(I offer an apology to my Jersey friends, as all my following measurements are for mature Holsteins and there is little research on the smaller brown cows. Contact me and I will be glad to send you my best guess as to where I think the numbers should be.)

Most commonly I see neck rails that are highly polished underneath. When the cow lunges up, she rubs her neck and head underneath the neck rail. Research says best stall usage happens when the neck rail is at least 48 inches above the bedding and 70 inches from the rear curb. I see very few barns with neck rails this high. Many are less than 40 inches and very well polished.

I think cows are like humans when it comes to bedding choices; I

can sleep pretty well in an extra-large California king bed, and OK in a kid's single with my feet hanging over the edge, but if somebody smacked me in the back of the head every time I got out of bed, I suppose I would stand there and debate about using it altogether.

Watch your cows. If you have a section of stalls with a higher neck rail, or a section is missing and the cows are constantly in those stalls, they are talking to you. I tell producers to move the neck rail on a section and see what the cows tell you. Welding vertical spacer bars or adding the commercially available spacers are easy ways to increase neck rail height

and improve stall usage. The neck rail at 70 inches from the rear curb is not as critical for cow comfort as the height is, in my opinion. I do not see much difference in stall usage if it is 66 inches or 74 inches. (Manure placement is entirely a different story). However, heights much shorter than 66 inches will reduce stall usage.

Adding stall length is tough. I have seen farms add concrete width to the curb, move the brisket board forward or remove it entirely, or screw on a heavy-duty 3-inch PVC pipe notched with a 90-degree cut to fit over the curb to add an extra couple of inches (doubles as a bedding saver, too).

I agree with the research that says the width of the stalls can impact lying time. Going from 44-inch-width to 48 inches added an hour a day to lying time, with a small increase going to 52 inches in width. I really like the handful of barns I have been in with 50-inch-width freestalls. Cows lie in them very straight, and with the narrower stalls they tend to lie more at an angle in the stalls. I have heard this happens because a cow will lie away from the more dominant cow with more space between their heads, but at the wider-width stalls (50 and 52 inches), there is enough space between

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them. Cow logic? Again, look at the polished spots on the freestalls. If the stall was wider, would she rub those spots that hard?

A bad brisket board can also hurt stall usage. I like to see them no more than 4 inches above the bedding. I want my comfortable cows to be able to lie with one or both legs stretched out in front of them. Look at cows lying in a pasture; 20 percent of them typically will be lying with front feet extended. Why would we want to put in a brisket board that impedes that? Again, watch the cows on those handfuls of stalls where the brisket board is missing or has been reduced in height. Are the cows using these stalls more? When in doubt, remove the brisket board. I have had many producers cut brisket boards down to size or at least notch out the center with great results. Distance from the curb should be about 68 to 70 inches.

The top of the bottom divider rail should be about 10 to 12 inches above the bedding. If lower, I see the tops of the bottom rail get polished up as cows' legs drag over the top. Higher than 12 inches and the bottoms of that rail get polished as the legs go too far under the rail when she attempts to stand – and the risk of leg injury increases. Pinch her legs a few times and she will not be as willing to lie down as she should. Additionally, when the top of the bottom divider rail is higher than 12 inches above the bedding surface, side-lunge space is effectively reduced.

Research also supports the importance of adequate front-lunge space in order to maximize stall usage. Less than 24 inches of lunge space makes it difficult for the cow to get up and down. The area in front of the stalls should be clear of obstacles, including the deterrent bar

on head-to-head stalls that should be at least 40 inches above the bedding. Any lower than that and it will impede the cow's ability to lunge forward as she attempts to stand. I like pipes and love surplus seat-belt strapping for the deterrent. By using a drywall screw to hold the seat-belt material in place, repairs take just minutes to fix when that heifer does decide to go through; the heads snap off easily and allow her to go through unhurt. If there is no wood to screw into, then a couple of zip strips work very well on the vertical metal pipes to hold the strapping in place. I hate cables, chains and ropes for deterrents because it is just a matter of time before a cow gets hurt, and then will she want to use those stalls again?

Curb height

Curbs taller than 8 inches seem to sometimes be associated with

increased lameness. Cows may be more prone to slipping and injury as they exit stalls. High curbs also equal high freestalls, so when cows perch gravity exerts even more pressure and abnormal weight distribution on the back feet; the higher the angle, the higher the pressure. As a cow starts her pivot when exiting a stall, there may be more wear on those back feet as a result of the increased pressure.

Research says lame cows housed on mattress-bedded stalls (versus sand-bedded stalls) have significantly decreased lying time since it is painful to get up, so they will just stand – losing milk. Average lameness scores vary wildly (since lameness score is subjective) in the research, and reduced lying times range from as little as an hour to as much as four hours with lame cows. Adding rubber to the floor will lower the curb height and may improve traction. I have also seen a few dairies cut the concrete curb down successfully.

Remember that for every extra hour a day when a cow is lying down, she will produce an extra 3 pounds of milk. Where are the bottlenecks on your farm denying her this extra hour of rest? Is it in time away from the bedding, overcrowding, wet bedding, the lack of bedding, bad freestall design or too many lame cows?

Our Holsteins are larger today, and they need more room to be comfortable in their freestalls. Recent research has found mature (fourth-lactation) Holstein cows are averaging 1,700 pounds of bodyweight and are not built for our '70s and '80s freestalls. Many producers argue with me that their cows just are not that large. Really? Tell me you have not shipped a cull cow weighing 2,000 pounds in the past six months, and just maybe I will agree with you. Cows are that large, and we need to give them stalls that fit that frame to maximize lying time and profitability. **PD**

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