

# Stall Comfort Matters in Tie-Stalls Too

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Everyone in the dairy industry is familiar with the term “cow comfort.” In general, cow comfort refers to minimizing all causes of cow stress in an effort to maximize animal well-being and milk production. Cow comfort encompasses the cow’s entire physical environment including the surface where the cow rests, the holding pen, the feedbunk, the milking parlor, alleyways, and the air in each of these environments. Because freestall barns are the predominant housing system in the US today, we spend a lot of time talking about cow comfort in freestall barns without addressing other housing systems. However, cow comfort matters in all dairy housing systems. Cow comfort can range from poor to excellent in every type of dairy housing depending on management choices and practices.

The 2007 USDA NAHMS (National Animal Health Monitoring System) study provided an excellent summary of dairy housing systems and practices across the United States. In this study, 49.2% of farms indicated that a stanchion or tie-stall barn served as the primary housing for their lactating cows whereas 32.6% of farms used a freestall barn. Over 60% of the cows in the study were housed in freestall barns because the freestall herds tended to be larger than the tie-stall/stanchion herds. With such a large percentage of farms housing cows in tie-stalls, why don’t we spend more time discussing cow comfort in tie-stall barns? Stall comfort matters in tie-stall barns too; particularly given the amount of time the cow spends in her stall.

One area that is often lacking in tie-stalls is stall comfort, more specifically lying surface comfort. Lying behavior plays a critical role in the production, profitability, and well-being of dairy cattle. 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. Increasing lying time may increase rumination, improve immune status, increase blood flow to the mammary system, reduce stress on the hoof, and reduce the incidence of lameness in a herd. 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. Cows strive to attain a fixed amount of lying time even at the expense of feeding time. Lying time has higher priority than eating time and social contact in both early and late lactation cows. In managing dairy cows, we need to do everything we can to ensure that cows have the opportunity to fulfill their lying time requirements.

Providing a comfortable, soft surface cushion may be the most important factor affecting stall usage and lying time. When stall surfaces are uncomfortable, lying times are compromised. An ideal stall bed conforms to the cow’s shape, provides cushion while the cow is getting up and lying down, maintains effective traction to minimize slipping, and remains dry to minimize bacterial growth and promote optimal udder health. Hock injuries are commonly observed in situations where cows are forced to lie on a hard surface or when insufficient bedding is provided (Figure 1). Bedding helps to minimize friction between the hock and the stall surface. When mattress or mats are used, inadequate bedding may also lead to hock injuries and poor stall use. This problem is worsened when the mattress cushions have lost their flexibility used past their useful life.

Many different combinations of stall bases and bedding types can be effective. Because manure removal in tie-stall barns often relies on a gravity or flush-based gutter behind the stalls, options for bedding are more limited than in tie-stalls. Although a sand-based tie-stall would provide excellent cow comfort, its manure management limitations eliminate this option for most producers. The most common resting surfaces in tie-stalls are rubber mats or rubber filled mattresses, which vary widely in quality and resiliency. Generally, rubber mats do not provide much “give” as the cows get up and down within the stall. In many cases, they are only slightly better than concrete. Rubber-filled mattresses provide more cushion for the cow although they often lose their cushion over time. Waterbeds and the new gel-based mattresses may provide more cushion for the cows over time. Although these options cost more than

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rubber mats, the additional investment may prove worthwhile through increased production and improved feet and leg health. In many tie-stall herds, lying times and stall comfort could be improved considerably by replacing hard or worn-out stall surfaces.

Although mats, mattresses, waterbeds, and mats may reduce the amount of bedding needed, bedding still must be used to minimize friction while the cow rises from the stall and to absorb moisture. Too often, the amount of bedding used on a tie-stall is insufficient (Figure 2). While producers may be hesitant to use more bedding because of costs and manure handling concerns, additional bedding is a clear opportunity to spend a dollar to make a few more dollars through improved productivity and health. In a Canadian study, lying times were increased by over an hour just by increasing the amount of shavings or straw used in tie-stalls (Figure 3). Thus, lying time can be improved considerably just by providing cows with more bedding (Figure 4). When mattresses or mats are used, at least 3" of bedding must be added to the top of the stall base. Tie-stalls should be groomed, removing manure and wet areas 2 to 3 times per day. Bedding should be added at least once per week and possibly once per day depending on the type of bedding used, environmental conditions, and observations of cow cleanliness.

Providing cows housed in a tie-stall barn with a comfortable stall base with plenty of cushion supplemented with plenty of bedding is the first step toward improving stall comfort and cow lying times. Investing in these improvements can provide considerable payback through increased production, improved feet and leg health, and increased longevity.

**Figure 1. Hock injuries are common in tie-stalls with hard resting surfaces or inadequate bedding.**



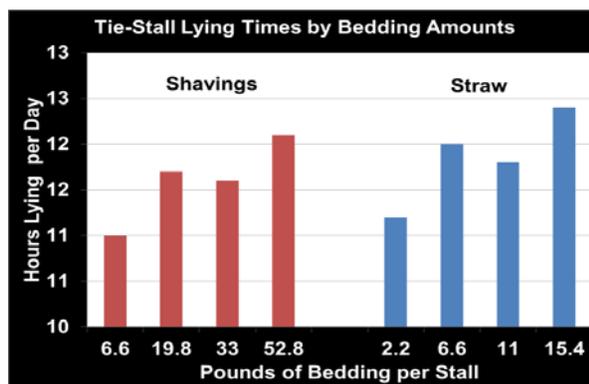
**Figure 2. Insufficient bedding on top of tie-stalls is a common problem.**



**Figure 3. Simply adding more bedding to tie-stalls can have a dramatic impact on stall comfort and lying times.**



**Figure 4. Lying times increased considerably with increased bedding in a Canadian study (Tucker et al., 2009).**



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