

# The Effect of Freestall Maintenance on Cow Comfort

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Although deep-bedded freestall housing provides many benefits for cattle, stalls require routine leveling and frequent addition of fresh bedding. In a series of 3 experiments, we documented how sand bedding depth and distribution change within freestalls after new bedding was added and the effect of these changes on lying behavior.

In Experiment 1, we measured the change in bedding depth at 43 points within 24 freestalls over a 10-d period. The change in depth of sand below the curb was the greatest in the day after new sand was added and decreased over time. The distribution of the sand also changed over time, taking on a hemispherical shape, with the maximum depths at the center and minimum depths near the edges of the freestall.

Based on the results of Experiment 1, we measured changes in lying behavior when groups of cows had access to freestalls with sand bedding that was either 0, 3.5, 5.2, or 6.2 cm below the curb. We found that lying time was 1 hour lower in stalls with the lowest levels of bedding. Indeed, for every 1-cm decrease in bedding, cows spent 10 min less time lying down during each 24-h period.

In a third experiment, we imposed four treatments that reflected the variation in sand depth in stalls: 0, 6.2, 9.9 and 13.7 cm below the curb. Again, lying times reduced with decreasing bedding, such that cows using the stalls with the least bedding (13.7 cm below the curb) spent 2 hours less time per day lying down. Other work in our group has also shown that hock injuries are more likely when the rear curb is exposed.

Implications: To maintain lying times, sand bedding should be added to deep-bedded freestalls frequently, such that the rear curb is covered by bedding.