



Flooring matters

A recent U.S. study reveals rubber is best for cow comfort and health, reducing lameness treatments

Cow comfort is a dairy farmer's top priority. Comfortable cows produce more milk. The surface your cows rest on is integral to keeping them content. Recent research indicates a softer, firm footing reduces chronic hoof inflammation, boosts production long-term, and reduces treatment for lame cows.

U.S. researchers have conducted several studies comparing sand, waterbeds and rubber mats in freestall barns. They wanted to determine if the surface cows walk on each day contributes to healthy cows. Recent research revealed lameness negatively impacts milk yield, conception rates and feed intake. Cows grazing on pasture have reduced lameness incidence compared with cows using zero-graze paddocks. Cows using bedding packs have fewer injuries than those in freestalls.

Does floor type affect lameness prevalence?

A Florida and Indiana study examined the impact of rubber flooring on lactation performance. The researchers wanted to determine the impact two different floors have on a cow's immune responses and production. They also wanted to determine if rub-



ber flooring, used in many new barn installations, is worth the investment. The study examined 30 heifers from before calving until day 180 of their second lactation. They were housed in freestalls that either had rubber flooring or concrete with diamond grooves in the alleyways. The heifers, which entered the research assignment after calving, were divided into two groups. They stayed on the treatment until the end of the first lactation. During the dry period, the heifers were housed in a bedded pack barn with pasture access until calving. After calving, they were returned to the same housing for their second lactation.

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The study showed the cows on rubber matting had fewer lameness treatments. A chart entitled *Hoof Treatments* indicates cows on rubber flooring were treated less than half as often as those on concrete. Also, cows exhibited pronounced locomotion score changes after being on the concrete. Cows on rubber flooring walked more confidently, or with a faster gait. Other research projects indicated cows walk more easily on soft, secure footing.

The study also examined how different floor types increase stress on the cows. Interestingly, cows on concrete during the first lactation were in



Ruminations is prepared by Ontario Ministry of Agriculture, Food and Rural Affairs livestock technology specialists to provide information you can use on your farm.



more pain and more stressed as measured in their cortisol levels. While the cortisol measurements evened out during the second lactation for both groups, the group housed on concrete had higher lymphocyte counts. This indicates more inflammation, which is a pain indicator. Another visual indicator of foot problems was cows on concrete had a higher incidence of foot rot during the second lactation.

Was production impacted by floor type?

The study showed there was little impact on overall milk yield. However, milk fat and protein and protein percentages all improved with rubber flooring as shown in *Table 1*. Other trials showed a negative milk yield response with lame cows.

Rubber better than other surfaces

The researchers in the Florida and Indiana study discovered cows have more challenges walking on concrete than on rubber flooring. The study also showed cows are in chronic pain and have more inflammation when walking on hard surfaces.

Rubber flooring can help keep cows healthy. Some strategies you can follow to help ensure your cows are comfortable include:

- having proper stalls for cows to lie in;
- using footbaths;
- scheduling frequent hoof trimming;
- keeping cows clean and dry;
- properly balancing rations;
- ensuring early detection of problems and treatment.

Know how to measure cow comfort

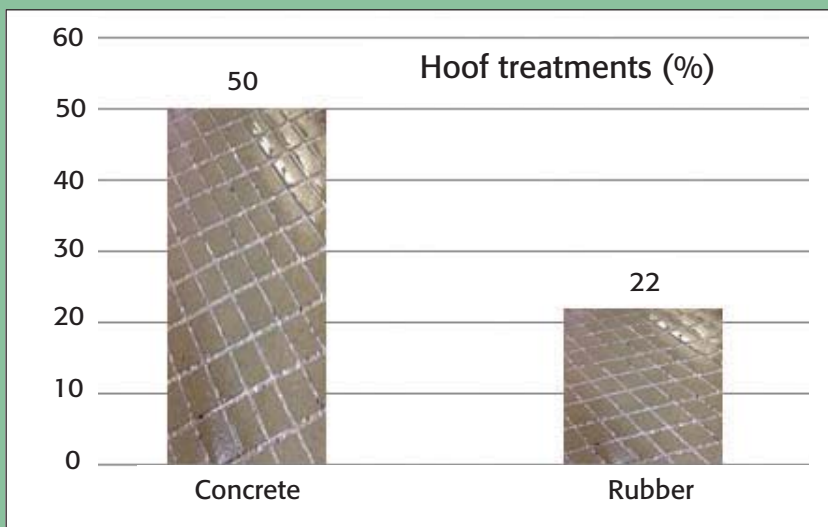
The Canadian *Code of Practice for the Care and Handling of Dairy Cattle* emphasizes cow welfare. Knowing how to measure cow comfort and what you can do to make your cows more comfortable are two of the code's goals. For instance, lameness prevalence on Ontario dairy farms is about 30 per cent.

Having enough stalls that are large enough for all your cows to rest in is

Table 1:

Production impacts of flooring choice

	Concrete	Rubber
Milk (kg)	11,600	12,200
Fat (Kg)	432	488
Protein	326	364
Fat %	3.7	4.0
Protein %	2.8	3.0



The research shows cows have more challenges walking on concrete than on rubber flooring. The problem is also chronic. It shows the cows experience chronic pain and inflammation when walking on hard surfaces.

important. If you overcrowd, some cows will not get adequate rest or have ample room to lie. Ensure your cows have a good resting surface, whether you're using sand, bedding or mats with deep bedding. Cows should be able to easily get in and out of the stall, lie and rise.

Use footbaths regularly, at least three or four times per week. Change the solution after every 150 to 200 cows. Make sure the bath is properly constructed, and is deep and long enough to be effective. Also, ensure your cows are entering a clean, dry environment when exiting the footbath. Get a professional trimmer to regularly trim your cows' hooves once or twice per lactation. This can help prevent problems from developing or worsening. Clean and dry environments inhibit infectious bacteria from inhabiting your cows' feet. As well, properly balanced rations help

reduce laminitis' impact.

Early detection and treatment help prevent problems from becoming chronic. Your veterinarian or foot health specialist can help you determine the proper surface for your cows and advise you on following proper cow comfort strategies. You may also want to check with your accountant to determine the costs involved with retrofitting your barn with rubber flooring.

Barry Potter is the agriculture development advisor for the Ontario Ministry of Agriculture and Food and Ministry of Rural Affairs. Literature cited: Eicher S.D., D.C. Lay JR., J.D. Arthington, and M.M. Shutz.: Effects of rubber flooring during the first 2 lactations on production, locomotion, hoof health, immune functions and stress. J. Dairy Science. 96: 3639-3651. 2013.mers of Canada.