



What Cows Prefer: Pasture and Access to the Barn

Lameness is widely regarded as a problem for both dairy cows and dairy producers. Lack of access to pasture has been linked with higher rates of lameness. Pasture is also perceived as providing a more natural environment for cows, so lack of access to pasture is often viewed as a welfare concern and organic standards typically require some pasture access. That said, many producers prefer housing systems based on zero access to pasture as free stall barns are designed to provide a high degree of comfort for cows. To provide access to pasture could be a challenge on many dairy farms. A well-designed barn provides cows with a comfortable place to lie down, protection from the elements, and free access to a well-balanced diet that helps maintain high levels of milk production. If cows can use a well-designed freestall barn do they really prefer or need access to pasture, and what are the advantages and disadvantages of pasture access?

Continuous access to pasture is not an option for many Canadian producers given our climate, but can even temporary access provide benefits? In one study, UBC researchers compared lameness in cows restricted to a freestall barn with cows restricted to pasture for 5 weeks.

Gait scoring was used to assess lameness: cows with a gait score of one were considered healthy and cows scored five were considered severely lame. Seventy-two multiparous dairy cows in mid to late-lactation were gait scored and divided into 18 groups of four animals. Nine groups of cows were restricted to each treatment for five continuous weeks sometime during July through October. The average gait scores for the pasture and freestall treatments were both three at the beginning of the trial. Cows on pasture grazed and were fed concentrate after each milking before returning to pasture. Cows kept in the barn were fed a total mixed ration (TMR). All cows were gait scored weekly and lying time was measured using a data logger attached to each cow's hind leg.

Average gait score improved for cows on pasture, despite reduced lying time, but the scores of cows in freestalls remained stable or worsened. Improvement

in gait was most apparent for cows with the highest initial gait scores, suggesting that pasture access is particularly beneficial for the more severely lame cows (see UBC Research Reports Vol 8 No 3 for more details).

This study indicates that cow lameness can be improved by providing even temporary access to pasture, but this might not be true for other aspects of cow welfare. Pasture access is perceived to be more natural than keeping cows inside, but most pasture provides little or no access to shade potentially increasing the risks of heat stress in the summer. Indoor housing provides shelter from direct sunlight and may help cows cope with higher temperatures.

To better understand if and how cows value access to pasture, UBC researchers simply allowed animals to vote with their feet. In this study, 25 late-lactation cows, tested in groups of five, had free access to either a freestall barn or to pasture immediately adjacent to the barn. At the start of the experiment cows were kept inside the barn or outside on pasture for 2 days each, after which cows were given free access to both options for 3 days. Each group of cows was tested three times from May through July under a range of climatic conditions.



Figure 1. UBC researchers gave cows free access to pasture to see if cows value this resource.

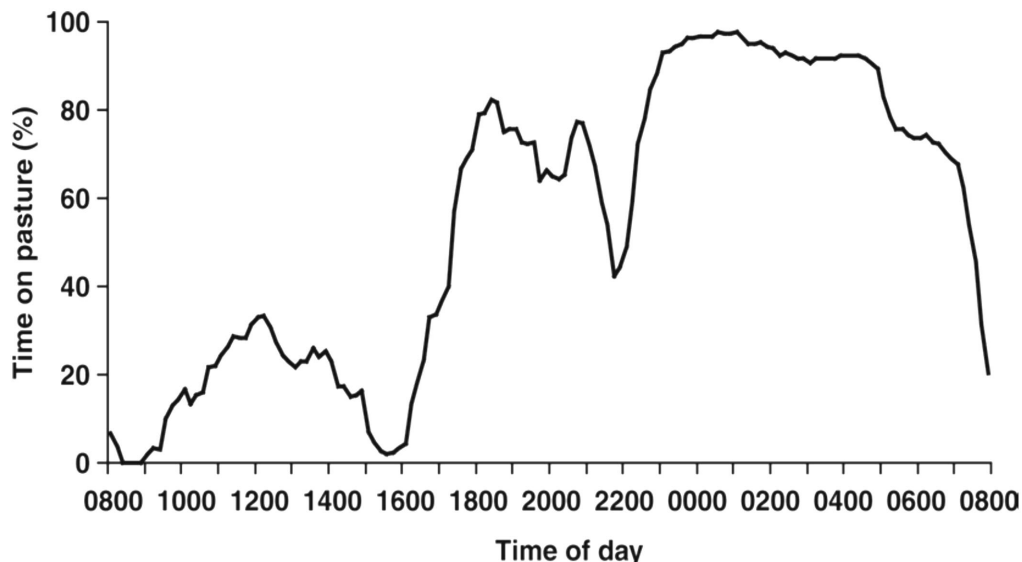


Figure 2. Cows spent the majority of the nighttime outside on pasture but spent the majority of the daytime inside the freestall barn. Cows were milked at approximately 0800 and 1500 h. Researchers associate warm daytime temperatures with the cows' preference for staying in the barn during the day.

Which did the cows prefer? The answer is both! When cows had the choice, they spent about 46% of the day indoors, especially on warmer days. They spent the majority of their time outside during the night between afternoon and morning milkings (Figure 2). Cows were most likely to prefer to be indoors on warm days (i.e. more than 20°C).

This study indicates that cows do not have an overall preference for either a well-designed freestall barn or for pasture; instead preference varies depending on the time of day and environmental conditions. From the cow's perspective, the best option may be to simply keep the barn doors open, allowing cows to access pasture when they choose.

One potential disadvantage of using pasture is that cows have access to a less energy dense diet, making it difficult to maintain high levels of milk production. However, when cows were allowed free choice between pasture and the freestall barn they continued to eat just as much TMR as when they were kept indoors continuously. These results suggested that cows could spend their nights on pasture and still maintain intake (and production) relative to cows that are not allowed outside. However, the study was designed to measure shorter-term behavioural effects, not the longer-term effects on intake and production.

To provide a better test of the effects of overnight access to pasture on production and intake, a third study was conducted. Fifty cows were assigned to one of two treatments: continuous freestall housing versus freestall housing during the day and pasture from 2000 h in the evening 0800 h the next morning. These treatments were applied from 4 weeks pre-calving to 8 weeks post-calving

Cows were fed TMR in the freestall barn and feed intakes were recorded. Body condition scores, body weights, and milk production were recorded throughout the experiment. None of these measures were affected

by pasture access; both groups of cows had high daily intakes of TMR (averaging 11.9 kg/d) and high milk production (averaging 38.3 kg/d).

Previous research has shown that cows kept only on pasture typically show reduced intakes and reduced milk production. However, by keeping cows in the barn during the day and on pasture at night, cows were able to consume their full daily intake of TMR during the day. Cows still graze the pasture at night, but this grass intake did not displace intake of the energy dense TMR or reduce production.

In summary these studies show that:

- 1) even temporary pasture access can be good for cow health, helping lame cows recover,
- 2) cow preferences for pasture access depend upon time of day and climatic factors – cows prefer pasture at night and during cool days, and
- 3) cows with access to pasture can maintain very high levels of TMR intake and milk production.

Together these three studies indicate that partial access to pasture is a practical management option for producers wanting to promote cow health and welfare while maintaining high levels of milk production.

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