

Perfecting the Dry Cow Diet: Part 1

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The transition period is considered to be one of the most challenging times during a cow's life as she faces various metabolic, physiological, and behavioral stressors. Over the past decade, considerable research has focused on nutritional strategies to help cows overcome the severity of negative energy balance that they experience as they transition from gestation to lactation. Of particular interest to me during my time at the University of Guelph, was the concept of feeding controlled energy dry cow diets. These diets, more commonly referred to as the 'Goldilocks Diet', are based on the concept of not too much, and not too little, but just the right amount... of energy that is. Typically, we see large amounts of wheat straw incorporated into the diet to lower the energy density which enables the cow to consume as much as she wants of a low nutrient dense diet. From a physiological standpoint, these diets work great because the cow is limited in body condition gain resulting in improved metabolic health post-calving. However, a downside to these diets is that straw is considered un-palatable to the cow and as a result we see lots of sorting and consumption of an imbalanced diet. The overall objective of my grad research, which was done at the University of Guelph under the supervision of Dr. Trevor DeVries, was to manipulate physical characteristics of these diets to promote consistency in intake, improve metabolic health, reduce feed sorting, and promote overall performance across the transition period. In part 1 of my research, I manipulated the chop length of wheat straw. Straw was either chopped with a 1-inch screen, or a 4-inch screen, and incorporated into the diet to make up ~30% of the ration DM. Other ingredients included corn silage, and a dry cow pellet. Cows were fed this diet throughout the entire dry period, and after calving all cows were fed the same lactating TMR. In this research, we were able to collect daily intakes, various measures of feeding behavior (including feed sorting), rumen pH, blood metabolites, BW and BCS, rumination time, and milk and component yield. Some of the key take away points for cows fed the **short straw diet** include:

- **HIGHER** intake across the entire dry period (see Figure 1); no difference in intake post-calving
- **LESS** of a drop-in intake as cows approached calving
- **LESS** sorting against the long forage particles
- **MORE** stable rumen pH around the time of calving
- **LOWER** blood ketones three weeks post-calving (see Figure 2)

In summary, the results from this research indicate that shorter chopped straw was favorable in terms of feeding behavior and metabolic health. In order to maximize intake of these high straw dry cow diets, the longest forage particles should not make up more than ~5% of the total diet. The success of these diets comes down to perfecting their management and making sure that the diet the cows consume is as close as possible to the diet that is formulated. For more details please check out: [https://www.journalofdairyscience.org/article/S0022-0302\(19\)30932-4/pdf](https://www.journalofdairyscience.org/article/S0022-0302(19)30932-4/pdf)

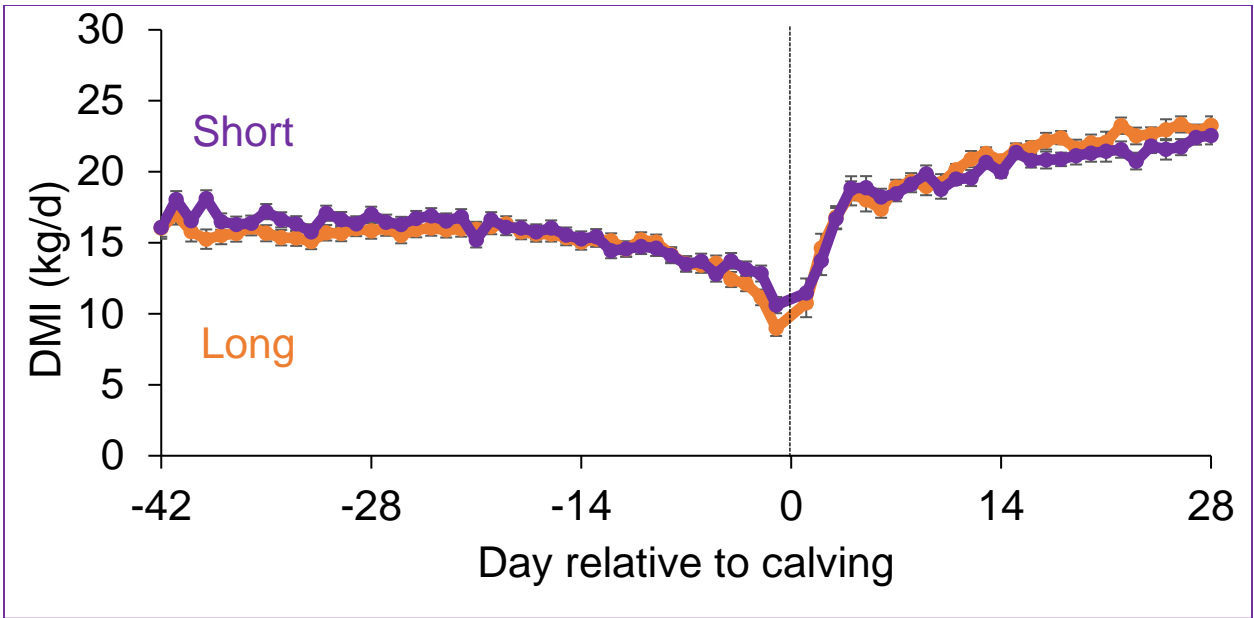


Figure 1. Daily DMI during the transition period

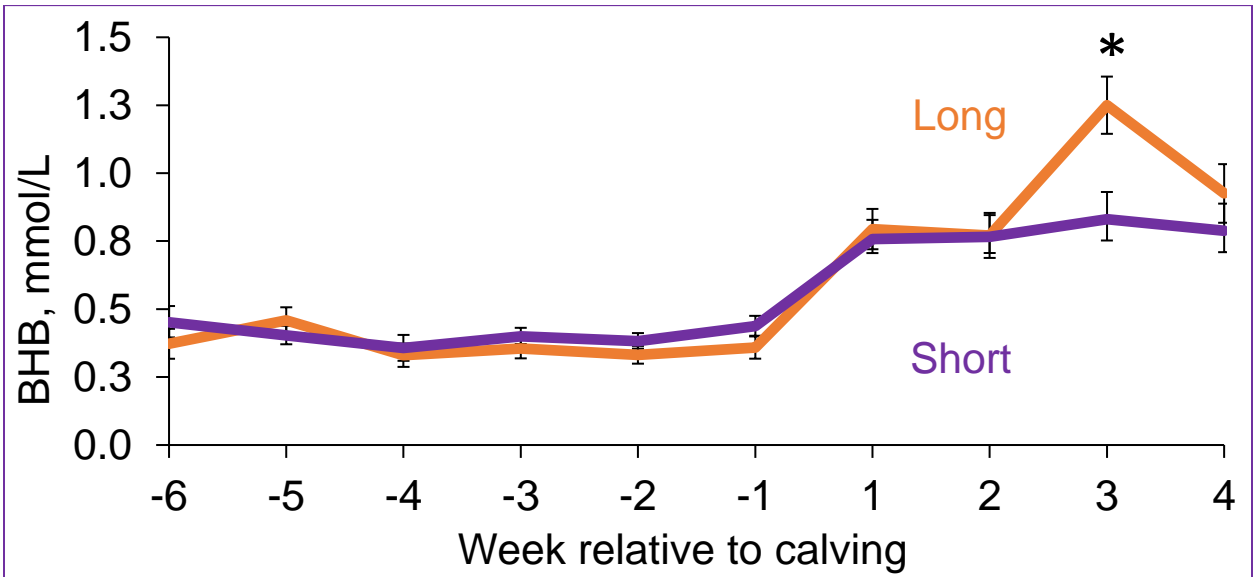


Figure 2. Blood BHB during the transition period