

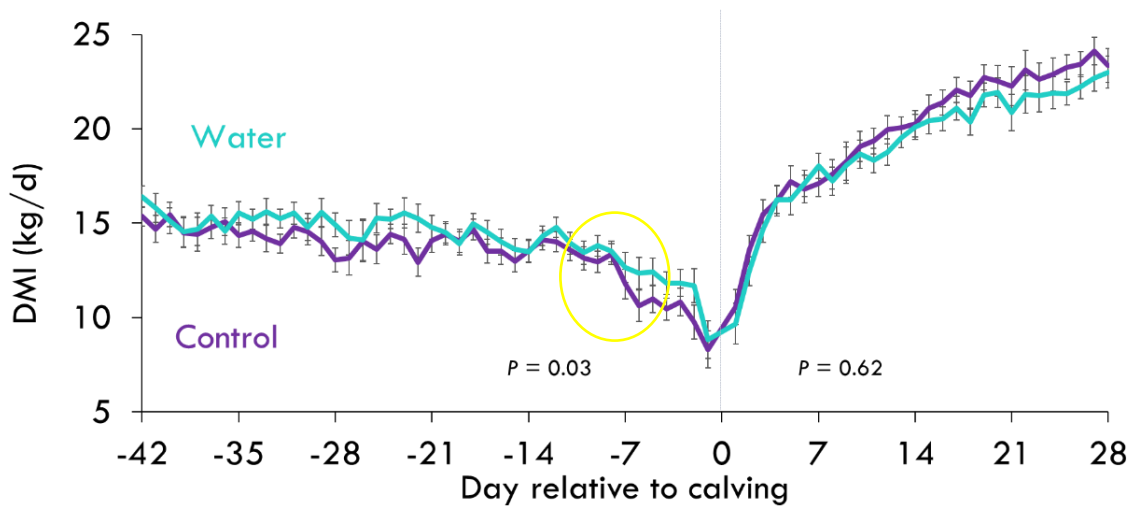
## Perfecting the Dry Cow Diet: Part 2

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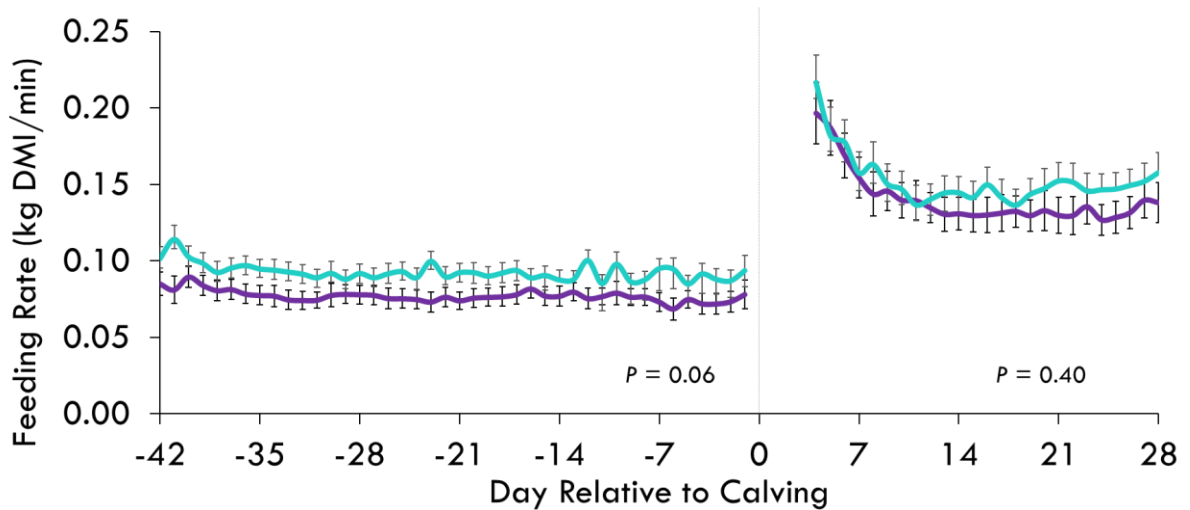
Several months ago, I reviewed one portion of my grad studies research that was conducted at the University of Guelph under the supervision of Dr. Trevor DeVries. That particular research project investigated the chop length of wheat straw in controlled energy dry cow diets (click [here](#) to read the previous article). As a recap, the research found that the shorter chopped straw (chopped with a 1-inch screen vs a 4-inch screen) resulted in higher intakes pre-calving, reduced sorting, reduced BHB levels three weeks after calving, and improved rumen pH 1 week after calving. One of the most interesting results though, was the reduced drop in intake in the week leading up to calving for cows fed the short chopped straw. A reduction in intake as cows approach calving is a natural occurrence that manifests through a combination of hormonal shifts and inflammation; however, we know that intake pre-calving can directly influence post-calving metabolic health and we know that cows with higher intakes have better health after calving. Reducing the drop in intake pre-calving, therefore, becomes critical to the success of the transition period. One of the biggest issues with feeding these diets, however, is that they are typically bulky, high in dry forages, and low in moisture content, whereas the lactating ration that the cows are used to consuming is typically denser, lower in forage content and higher in moisture content. Past research has investigated the impact of moisture content on intake, feed sorting behavior and various measures of metabolic health and have found varying results. When water was added to a lactating diet some researchers found that cows had increased intake and decreased sorting, while other researchers found cows actually sorted more and had decreased DMI. The inconsistency in results is likely related to the TMR composition and the original DM content of the diets. For example, one study used primary ensiled forages and another study used solely dry forages. Up until the point of my research, we weren't aware of any research looking at water addition to a controlled energy dry cow diet and how it impacts intake, sorting, metabolic health, and performance across the transition period. Similar to my particle size research, we were able to collect daily feed intakes, various measures of feeding behavior (including feed sorting), rumen pH, blood metabolites, BW and BCS, rumination time, and milk components and yield. Cows were enrolled on the study ~45 days prior to calving and were fed the same dry cow diet (36% wheat straw, 41% corn silage, 23% pellet, on a dry matter (DM) basis, formulated for 11.6% crude protein, 1.35 Mcal/kg net energy for lactation) with the only difference being the addition of water to one group in order to reduce the DM by approximately 10% (control diet DM was on average 53.4%, water diet DM was on average 45.4%). After calving, all cows were fed the same lactating diet and followed for 28 days to identify any potential carry over effects of the dry period treatment diets. Some of the key take away points for cows fed the diet with added water are as follows:



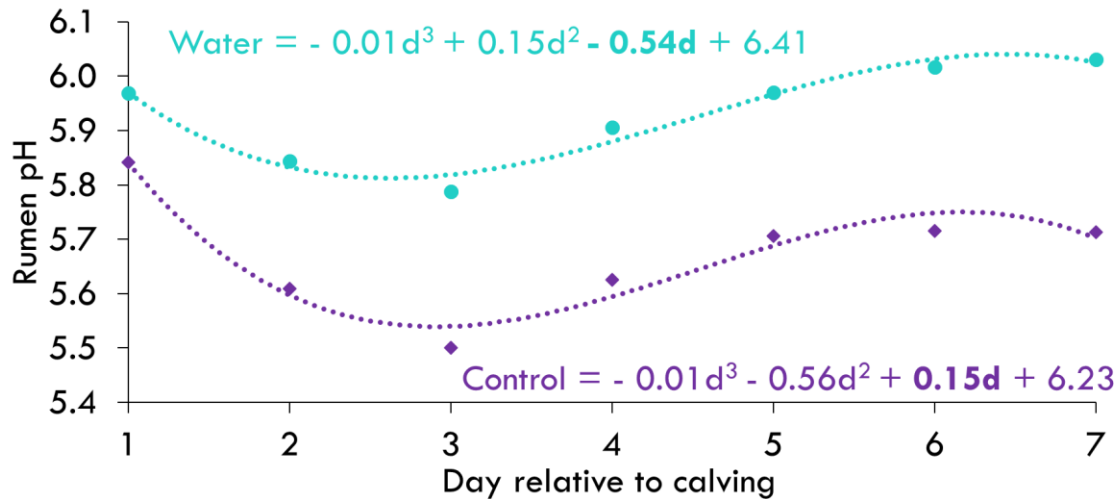
- Higher DMI across the dry period and more consistent intake in the week leading up to calving (see figure below)



- Faster feeding rate in the dry period but NOT during lactation (see figure below). This is an important finding because ‘slug feeding’ is not desirable when the risk of acidosis is high (i.e. lactation) but the risk of acidosis is low during the dry period so a faster feeding rate could translate to higher intakes. The fact that there was no difference after calving demonstrates that cows **did not** carry over a feeding behavior from the dry period into lactation.



- Less sorting against the long forage particles, and less sorting in favor of the medium forage particles during the dry period. No differences in sorting after calving.
- Higher rumen pH during the first three weeks after calving (see figure below for the difference in rumen pH during week 1 post-calving)



*Bolded coefficients differ at  $P \leq 0.05$*

In summary, water addition to a high straw dry cow diet helped promote intake during the dry period and reduced sorting behaviors. Post-calving rumen health was improved for cows fed the diet with increased moisture content, which is likely a result of cows maintaining more stable intake in the week leading up to calving resulting in a more stable rumen environment. When possible, adding water to high dry forage dry cow diet would be a beneficial strategy. Careful consideration should be had when adding water to diets in the summer months when the risk of heating and spoilage are high, and when adding water to a diet containing primary ensiled forages. Consult with your nutritionist and reach out to me if you have any further questions regarding maximizing success of feeding controlled energy dry cow diets. For more information on this research project, please refer to the Journal of Dairy Science article listed [here](#), or the following YouTube video: [Transition Cow Nutrition: Part 2](#). This project was financially supported by a Natural Sciences and Engineering Research Council of Canada (NSERC; Ottawa, ON, Canada) Collaborative Research and Development Grant with Trouw Nutrition (Guelph, ON, Canada), as well as from the Ontario Agri-Food Innovation Alliance Research Program of the University of Guelph and the Ontario Ministry of Agriculture, Food, and Rural Affairs (Guelph, ON, Canada).