

## HIGHER PEAK MILK FOR COWS FED BMR CORN SILAGE

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High peak milk production has an important impact on a cow's lactation. Each 1-pound increase in peak translates into 213 to 304 pounds more milk (ME 305) throughout the entire lactation.<sup>1</sup> Unfortunately, the cow's inability to increase dry matter intake during the first weeks after calving can reduce the level of peak milk. This problem is exacerbated with rations containing high levels of low-digestibility forage.

### HIGH FORAGE RATIOS IN EARLY LACTATION

Dairy producers are adding more corn silage to rations as a forage source, in some cases increasing forage to 60 percent or more of dry matter. As cows consume more forage, the corresponding rumen fill can limit dry matter intake. This can be problematic in early lactation when high intakes are critical. One solution is to feed highly digestible forages that pass through the rumen more quickly and allow for cows to be ready to eat again.

Scientists at Utah State University set out to determine if feeding highly digestible brown midrib (BMR) corn silage to cows in early lactation could increase dry matter intake and achieve higher peak milk production.<sup>2</sup>

### COMPARING FRESH COW DIETS

Beginning at calving and continuing for 180 days, the researchers fed one group of Holstein cows a ration containing BMR corn silage from a hybrid with the *bm3* gene mutation. Another fresh group received conventional (non-BMR) corn silage. Neutral Detergent Fiber digestibility (30-hour *in-vitro*) for the BMR corn silage was 71.4 percent — 9.2 percentage points higher than the conventional corn silage.

All diets were formulated to maintain a forage-to-concentrate ratio of 60:40. Except for the corn silage hybrid, all other ration ingredients were the same. The total mixed ration incorporated alfalfa hay, flaked corn, dried distillers grains, soybean meal and whole cottonseed. Corn silage made up 35.1 percent of the ration dry matter and alfalfa hay made up 24.8 percent.

### HIGHER INTAKE, MORE MILK

For the first 180 days of lactation, Utah State researchers compared dry matter intakes, production parameters and body fat mobilization between the two rations.

Dry matter intake after peak milk was higher for the BMR-fed cows. As cows recover from negative energy balance, dry matter intake is controlled less by oxidation of fuels in the liver and more by ruminal distension. The Utah State results demonstrate that feeding diets with high digestibility during this stage of lactation allows for greater dry matter intake (Figure 1).

### HIGHLIGHTS

- Utah State University researchers compared performance of early lactation cows fed conventional corn silage with that of cows fed BMR corn silage with the *bm3* gene mutation.
- Cows fed BMR corn silage reached higher peak milk production and averaged 2 pounds more energy-corrected milk per day during the first 180 days of lactation.
- BMR corn silage promoted higher feed intake.
- Cows fed BMR corn silage lost less weight in early lactation.

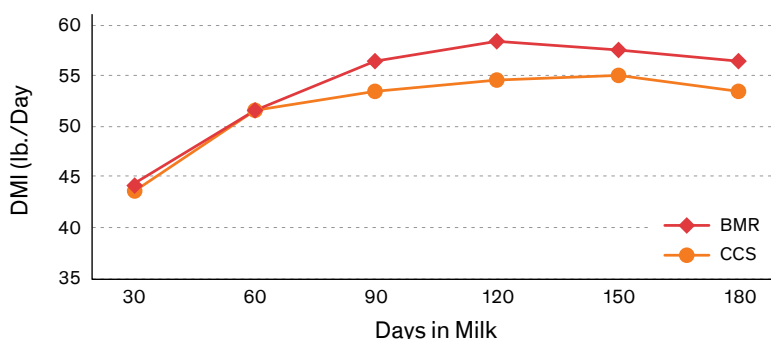
Higher feed intake translated into higher milk yield at peak lactation, and the production advantage persisted through the first 180 days in milk. Cows fed the BMR corn silage diet produced an average of 2 pounds more energy-corrected milk per cow per day compared with those on the conventional corn silage diet (Figure 2).

### LESS WEIGHT LOSS

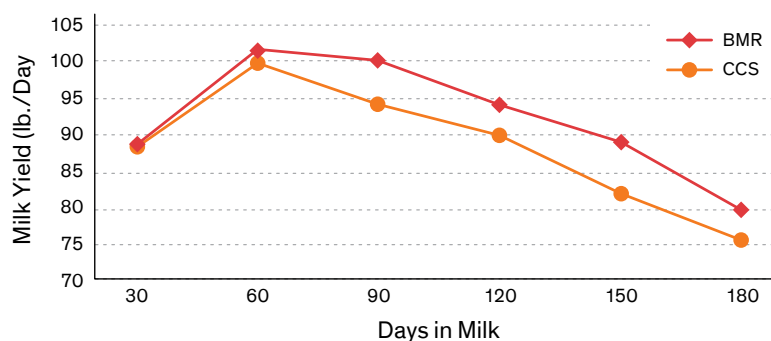
In addition, cows fed BMR corn silage maintained better body condition in the first 60 days of lactation, typically a time of negative energy balance. Cows were weighed at 30-day intervals. Those fed BMR lost less than a half a pound of body weight per day from Day 1 to 60, compared with more than a pound per day of body weight loss for those fed the conventional corn silage ration (Figure 3). After 90 days, there were no differences in body weight among the cows.

The bottom line: Feeding BMR corn silage with the *bm3* gene in high-forage diets can lessen body fat mobilization in fresh cows without limiting dry matter intake around peak lactation, resulting in higher peak milk and greater lactation persistency.

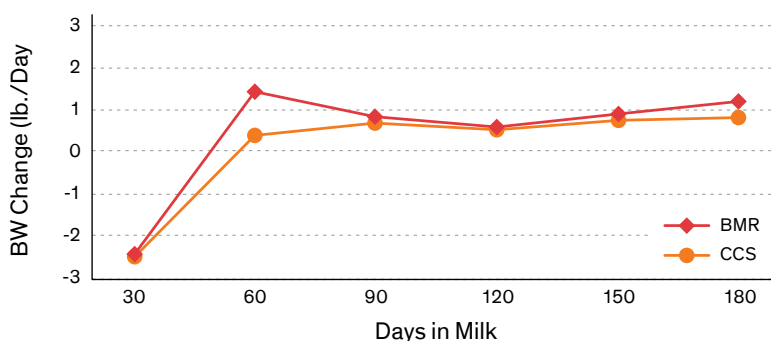
**FIGURE 1. DRY MATTER INTAKE (DMI) FOR COWS FED CONVENTIONAL CORN SILAGE (CCS) OR BROWN MIDRIB (BMR) CORN SILAGE WITH *BM3* GENE MUTATION**



**FIGURE 2. MILK YIELD OF COWS FED CONVENTIONAL CORN SILAGE (CCS) OR BROWN MIDRIB (BMR) CORN SILAGE WITH *BM3* GENE MUTATION**



**FIGURE 3. BODY WEIGHT (BW) CHANGE FOR COWS FED CONVENTIONAL CORN SILAGE (CCS) OR BROWN MIDRIB (BMR) CORN SILAGE WITH *BM3* GENE MUTATION**



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<sup>1</sup>AgSource. 2013. Wisconsin DHIA data.

<sup>2</sup>Holt, M.S., J-S Eun, C.R. Thacker, A.J. Young, X. Dai, K.E. Nestor Jr. 2013. Effects of feeding brown midrib corn silage with a high dietary concentration of alfalfa hay on lactation performance of Holstein dairy cows for the first 180 days of lactation. *J. Dairy Sci.* 96: 515-523.

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