



# Evaluating the Use of BMR (Brown Midrib) Corn as an Acceptable Forage Source for Grazing Cattle

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## Introduction

Montana is a low-rainfall area, with limited irrigation in some areas. Moisture is critical for producing high-yielding, high-quality forages. Finding forage species that are high-yielding as well as high-quality is important for livestock producers throughout Montana and the region. Corn is commonly used in other parts of the country as a forage source, mainly as an ensiled product, due to its high yields per acre and high forage quality. Brown Midrib (BMR) corn is a hybrid corn, with reduced lignin and improved digestibility, allowing for greater dry matter and nutrient intake, and could be a valuable forage substitute for many areas. Our objective was to evaluate three BMR corn varieties for their use as a forage grazing source for livestock. Our hypothesis was that the corn varieties would be adequate for grazing livestock and will be able to be utilized by producers as another forage option.

## Materials and Methods

- Randomized complete block design: 3 blocks and 3 replications of 3 BMR varieties within each block
- Corn was planted on 6/10/2015 and a 0.3 m × 0.3 m sample was hand-harvested on 8/24/2015
- Samples were weighed for a wet/fresh weight, then dried and weighed to calculate dry matter (DM) content  
 $(DM \% = (fresh\ weight - dry\ weight) / fresh\ weight)$
- Samples were ground through a 2-mm Wiley mill screen and sent to a commercial lab for nitrate analysis
- Crude protein (CP) was calculated using a LECO analyzer
- Neutral detergent fiber (NDF) and acid detergent fiber (ADF) were measured with an ANKOM 2000 fiber analyzer machine and method
- *In situ* digestibility was also run at incubation times of 0, 24, 48, and 96 hours to determine the neutral detergent fiber digestibility (NDFD)
- Data was analyzed using PROC GLM of SAS (Cary, NC)

Table 1. Nutrient concentrations of 3 BMR corn varieties.

Variety	CP %	ADF %	NDF %	Nitrate ppm	48-h NDFD %
1	13.0 <sup>a</sup>	38.1	56.0 <sup>a</sup>	0.19	76.34
2	14.2 <sup>b</sup>	37.4	55.2 <sup>b</sup>	0.25	73.82
3	14.3 <sup>b</sup>	37.8	56.5 <sup>a</sup>	0.14	75.34

Columns with varying superscripts indicate significant difference ( $P < 0.05$ ).

Table 2. *In situ* neutral detergent fiber digestibility values for 3 BMR corn varieties.

Variety	24-h NDFD %	48-h NDFD %	96-h NDFD %
1	53.91	76.34	79.06
2	52.21	73.82	77.10
3	53.10	75.34	77.82

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### References:

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## Discussion

- All nutrient values were within normal ranges for previously reported BMR corn varieties studies (1) (2)
- No differences among the 3 varieties for ADF, NDF, nitrates, or NDFD
- CP was higher in varieties 2 and 3 than variety 1
- There was an effect of replication on NDF, ADF, and CP
- Nitrate levels were in the range considered “safe for all livestock” to “dilute-feed for pregnant livestock”
- BMR varieties have higher NDFD values compared to other hybrids (3)

## Conclusion

BMR corn is an acceptable forage source for grazing livestock.

