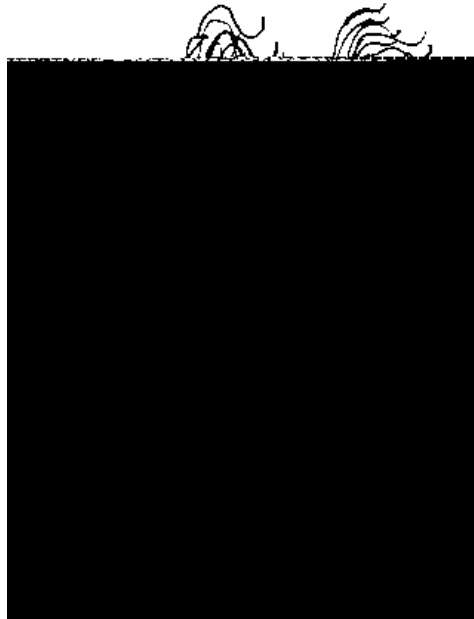


2012 Brown Mid-Rib Corn Variety Trial



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Brown mid-rib (BMR) corn has a lower lignin content than other silage corn varieties. The lower lignin content increases the fiber digestibility (NDF digestibility) of the corn silage. Increases in NDF digestibility lead to increased in dry matter intake, milk production, milk protein content, and better body condition. Several studies have reported that for every one percentage point increase in NDF digestibility fed to dairy cattle there will be a 0.50 lb per day increase in milk production. Feeding BMR corn silage is a means to increase NDF digestibility and milk production. Since 2010, the University of Vermont Extension Northwest Crops & Soils program has conducted research trials to evaluate BMR corn silage varieties. In 2012, the trial included 10 varieties from three different seed companies. While the information presented can begin to describe the yield and quality performance of these BMR corn varieties in this region, it is important to note that the data represent results from only one season and one location. Compare other hybrid performance data before making varietal selections.

MATERIALS AND METHODS

Mycogen	Pioneer	Seedway
Claude Fortin District Sales Manager Highgate, Vermont (802) 363-2803	Jacob Bourdeau Bourdeau Bros. Sheldon, VT (802) 933-2277	Ed Schillawski 3442 Rte. 22A Shoreham, Vermont (802) 897-2281

Table 2. Relative maturities and listed traits of ten BMR varieties.

Variety Company

contents, which include sugars, starches, proteins, nonprotein nitrogen, fats and other highly digestible compounds; and the less digestible components found in the fiber fraction. The total fiber content of forage is contained in the neutral detergent fiber (NDF). Chemically, this fraction includes cellulose, hemicellulose, and lignin. Because of these chemical components and their association with the bulkiness of feeds, NDF is closely related to feed intake and rumen fill in cows. Recently, forage testing laboratories have begun to evaluate forages for NDF digestibility (dNDF). Evaluation of forages and other feedstuffs for dNDF is being conducted to aid prediction of feed energy content and animal performance. Research has demonstrated that lactating dairy cows will eat more dry matter and produce more milk when fed forages with optimum dNDF. Forages with increased dNDF will result in higher energy values, and perhaps more importantly, increased forage intakes. Forage dNDF can range from 20–80%, and is typically higher in BMR corn than conventional silage corn.

Net energy for

- 3) Genetic, dietary, and environmental differences affecting feed utilization are not considered.

Variations in yield and quality can occur because of variations in genetics, soil, weather, and other growing conditions. Statistical analysis makes it possible to determine whether a difference among treatments is real or whether it might have occurred due to other variations in the field. All data was analyzed using a mixed model analysis where replicates were considered random effects. At the bottom of each table a LSD value is presented for each variable (e.g. yield). Least Significant Differences (LSD's) at the 10% level (0.10) of probability are shown. Where the difference between two treatments within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure in 9 out of 10 chances that there is a real difference between the two values. Treatments that were not significantly lower in performance than the highest value in a particular column are indicated with an asterisk.

In the example below, hybrid A is significantly different from hybrid C but not from hybrid B. The difference between A and B is equal to 1.5, which is less than the LSD value of 2.0. This means that these two hybrids did not differ in yield. The difference between A and C is equal to 3.0, which is greater than the LSD value of 2.0. This means that the yields of these two hybrids were significantly different from one another.

RESULTS

Using data from a Davis Instruments Vantage Pro2 weather station at Borderview Farm in Alburgh, VT, weather data was summarized for the 2012 growing season (Table 3). Though May was warmer and wetter than normal (based on 1981-2010 data), June, July, and August all had less precipitation than average. There were an accumulated 2,545 Growing Degree Days (GDDs) at a base temperature of 50°F. This was 264 more than the historical 30-year average for May-September.

Table 3. Summarized weather data for 2012 Alburgh, VT.

Yields were adjusted to 35% dry matter and were statistically different by variety. The highest yielding varieties were Pioneer variety ‘P1376XR,’ Mycogen’s ‘F2F665,’ ‘F2F626,’ ‘F2F488,’ ‘F2F569,’ and ‘F2F343’ (Figure 1). The overall trial average yield was 19.8 tons per acre. The corn trial was harvested at an average 40.0% dry matter content (60.0% moisture). Dry summer and early fall conditions resulted in a rapid dry-down of corn silage crops in the area.

Table 4. Population, yield, and dry matter content of ten BMR varieties, Alburgh, VT, 2012.

Variety	RM	Yield at 35% DM tons ac ⁻¹
F2F298	88-90	17.5
F2F343	92	18.7*
SW3737	94	12.7
F2F387	95	17.2
F2F488	98	24.2*
F2F569	104	20.2*
SW5555	104	13.8
F2F626	108	24.3*
F2F665	109	24.6*
P1376XR	113	24.8*

LSD (0.10)

The majority of forage quality characteristics analyzed did vary significantly by BMR corn variety (Table 5). There was no significant difference in crude protein (CP) among varieties, and the tria

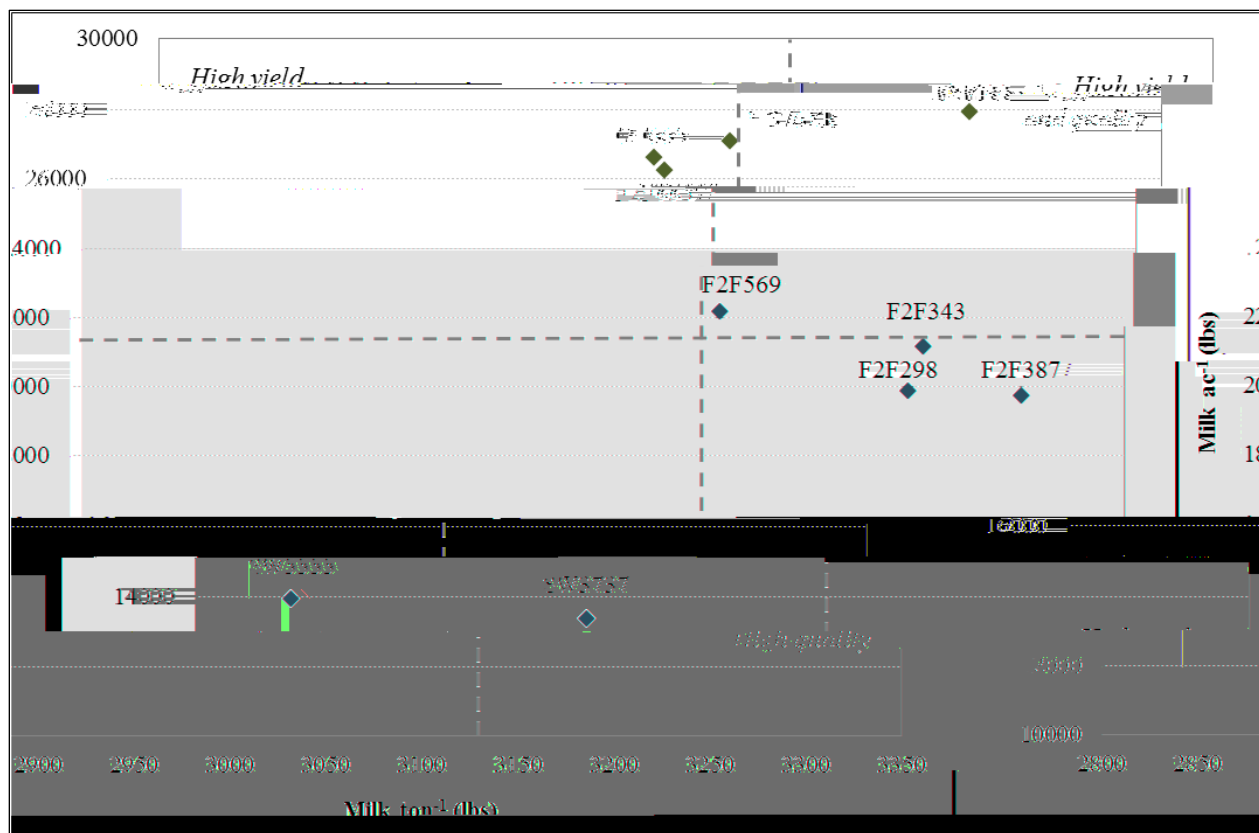


Figure 2. Milk production of ten BMR corn silage varieties, Alburgh, VT, 2012, showing relationship between milk per ton and milk per acre. Dotted lines represent the mean milk per ton and milk per acre for the location.

DISCUSSION

The average yield for this BMR corn trial was 19.8 tons per acre at 35% dry matter content. This is higher than the trial average in 2011 (18.6 tons per acre) and above average in general, perhaps due to the favorable growing conditions of the season. Though a drought hit Vermont in mid-summer, the growing season overall was favorable for corn silage. While BMR corn can have a yield drag when compared to conventional silage corn varieties in a given year, its higher NDF digestibility (dNDF) often makes it a viable choice for growers looking to maximize milk production. The 2012 trial average for dNDF, 69.1% of NDF, is on the high end for typical corn silage.

Though crude protein did not vary significantly by variety, all other corn quality indicators differed significantly by variety. Milk per ton was highest in the variety F2F387, though not statistically higher than the milk per ton value of F2F488, P1376XR, F2F343, F2F298, and F2F569. Milk per acre, which takes yield into consideration, is a more reliable indicator of milk production for a variety, and was highest in F2F488, P1376XR, F2F665, F2F626, F2F569, and F2F343. This is not surprising, as all of these varieties were also among the top-performers for yield.

