Mycogen® SEEDS

NOT ALL BMR HYBRIDS ARE CREATED EQUAL

By the Mycogen Seeds Dairy Nutrition Team

Cornstalk cross-sections demonstrate the difference in lignin content between Mycogen® brand BMR hybrids (left) and conventional corn (right).

HIGHLIGHTS

- BMR corn hybrids contain less lignin, which leads to higher digestibility.
- The *bm3* gene is lower in lignin and higher in digestibility than other BMR mutations.
- All Mycogen® brand BMR corn hybrids contain the *bm3* mutation.
- Mycogen brand BMR hybrids yield competitively with *bm1* hybrids.
- Know which type of BMR you are planting to get the highest feeding value.

You've heard of brown midrib (BMR) corn hybrids, but did you know there are four different BMR gene mutations? They are *bm1, bm2, bm3* and *bm4*, and all are different when it comes to corn silage performance.

UNDERSTAND BMR

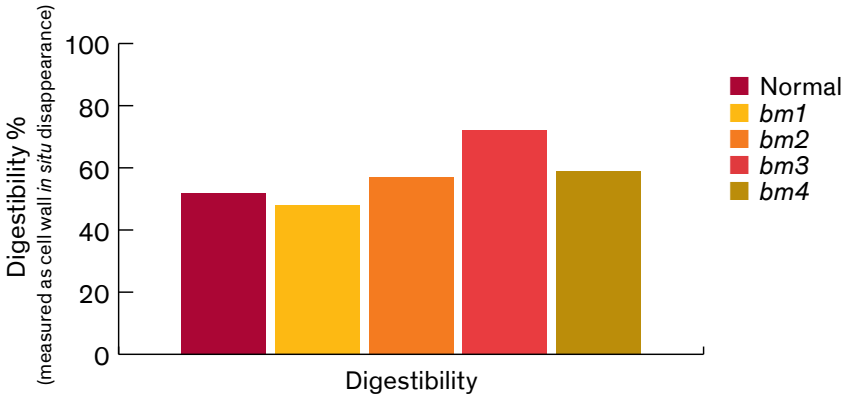
BMR, discovered in 1924, is a naturally occurring gene mutation that results in less lignin in the cornstalk. Lignin is the indigestible portion of the corn plant. Lower lignin means higher digestibility, which leads to greater dry matter intake (DMI) and more milk. Sixteen research trials since 1999 show that cows fed Mycogen® brand BMR corn produce an average of 4.8 pounds more milk per day. Greater corn silage intake allows producers to reduce the amount of grain included in the ration.

KNOW THE DIFFERENCE AMONG BMR MUTATIONS

As early as 1971, researchers have studied the differences among the BMR gene mutations. For decades, scientists have proven that *bm3*, found in Mycogen brand BMR hybrids, has a dramatic advantage in digestibility over the other mutations. In 1972, a study was reported by Lechtenberg et al.,[1] showing *bm3* as having the highest digestibility. This study also shows that one of the BMR gene mutations (*bm2*) actually contains amounts of lignin higher than conventional corn hybrids.

In 1999, researchers measured the lignin content and digestibility of BMR and conventional hybrids. Ostrander, et al.,[2] confirmed earlier findings that *bm3* has the lowest lignin content and highest digestibility (Figure 1). In 2003, a study by Marita et al.[3] concluded once again that *bm3* had the lowest level of lignin among all BMR mutations.

FIGURE 1. DIGESTIBILITY OF NORMAL AND BMR MUTANTS OF CORN SILAGE



Ostrander, et al., 1999

KNOW WHICH TYPE OF BMR YOU ARE PLANTING

The *bm3* mutation has been proven over many years to be superior in digestibility not only to conventional corn hybrids but also to all of the other known BMR gene mutations. All Mycogen brand BMR corn hybrids contain the preferred *bm3* mutation, while some other seed companies promote hybrids with the *bm1* gene mutation.

ASK TO SEE DATA

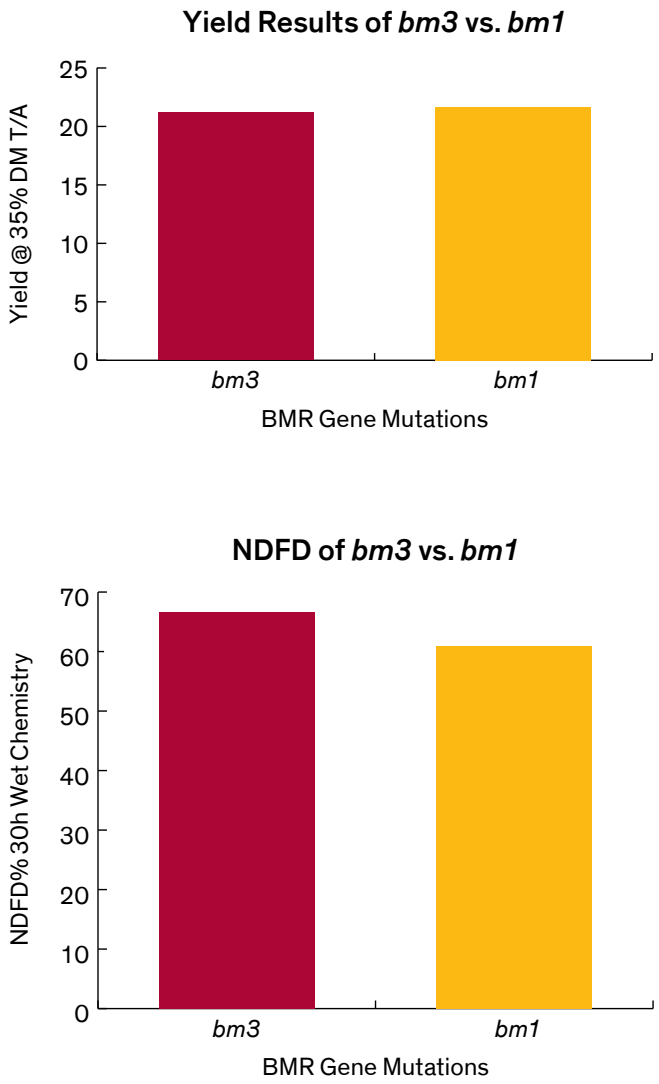
When considering planting a BMR silage hybrid, it's important to do your homework and ask your seed supplier to show you digestibility and yield data. The latest-generation Mycogen brand BMR hybrids with the *bm3* gene have comparable silage tonnage plus a distinct advantage in Neutral Detergent Fiber digestibility (NDFD) compared with *bm1* hybrids.

Field trials conducted from 2010 through 2012 across nine states compared yield and digestibility of Mycogen brand BMR hybrids with that of commercial *bm1* hybrids (Figure 2). The difference in yield between *bm3* and *bm1* corn silage averaged less than 0.5 ton per acre at 65 percent moisture over the three-year period. But Mycogen® brand BMR hybrids with the *bm3* gene had an NDFD (30-hour wet chemistry) advantage, averaging 6.4 percentage points over the *bm1* BMR hybrids.[4] Research shows that each percentage increase in NDFD translates into a 0.37-pound increase in feed intake and a 0.55-pound increase in milk production per cow per day.[5]

CONSULT WITH AN EXPERT

Mycogen Seeds customer agronomists and forage nutritionists have decades of experience with BMR hybrids. These experts can help you successfully manage your silage program through planting, harvest and feeding. Proper use of BMR not only can help achieve higher milk production but also can increase the value of corn silage, resulting in a higher return on investment.

FIGURE 2. FIELD COMPARISONS OF *BM3* AND *BM1* BMR MUTATIONS OF CORN SILAGE, 2010-12



Mycogen Seeds Field Trials

For more information on how Mycogen® brand BMR corn silage can improve a dairy's bottom line, visit the Mycogen Seeds website at www.mycogen.com or contact your local Mycogen Seeds representative.

[1]Lechtenberg, V.L., L.D. Muller, L.F. Bauman, C.L. Ryhkerd, and R.F. Barnes. 1972. Laboratory and *in vitro* evaluation of inbred and F^2 populations of brown midrib mutants of *Zea mays* L. *Agron J.* 64: 657-660.
[2]Ostrander, B., M. Maillot, S. Toillon, Y. Barriere, M. Pollacsek, and J. Besle. 1999. Cell wall phenolics and digestibility of normal and brown midrib maizes in different stem sections and across maturity stages. *J Sci Food Agric*. 79(3): 414-415.
[3]Marita, J.M., W. Vermerris, J. Ralph, and R.D. Hatfield. Variations in the cell wall composition of maize brown midrib mutants. *J Agric Food Chem*. 2003;51(5): 1313-1321.
[4]Strip trial results taken from Mycogen Seeds internal field trials done in Indiana, Iowa, Michigan, Minnesota, North Carolina, New York, Ohio, Pennsylvania and Wisconsin, 2010-2012. Analysis by Cumberland Valley Analytical Services, Inc.
[5]Oba, M., and M.S. Allen. 1999. Evaluation of the importance of the digestibility of neutral detergent fiber from forage: effects on dry matter intake and milk yield of dairy cows. *J Dairy Sci.* 82(3): 589-596.