

FORAGE RESEARCH UPDATES

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MINNESOTA

Bt Corn Matches Non-Bt Corn Silage Quality

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Corn hybrids protected by the Bt-toxin gene against the European corn borer accounted for about 30% of US corn acres planted in 2003. Increased use of Bt corn has reduced insecticide use for control of this pest in corn production. Two recent reports have suggested that Bt corn plants contain more lignin. Lignin in plants limits digestion of plant fiber by cattle. If more lignin is present in Bt corn plants, the feeding value of corn silage made from Bt corn hybrids would be reduced for dairy and beef cattle.

To test the validity of these claims about increased lignin in Bt corn, 12 commercial hybrids (six Bt hybrids and their genetically identical non-GM counterparts) were compared in a field study at four locations around Minnesota. Results were as follows:

- No consistent differences were found for lignin concentration of the Bt corn plants compared to their respective genetic counterparts.
- Total corn silage yield and concentrations of protein, starch, and fiber were also not altered by the presence of the Bt gene.
- Fiber digestibility was also not different between Bt and normal corn hybrids.

The presence of the Bt gene in genetically modified corn hybrids did not alter lignin content or other corn characteristics. Farmers should thus have confidence that Bt corn hybrids can be used for dairy and beef production without impacting milk and meat production.

Table 1. Forage quality of Bt and Non-Bt corn hybrids averaged across four Minnesota locations in 2003.

	NDF	Lignin (ADL)	Starch	NDF Digestibility (24-hr in vitro)
	-----% of Dry Matter-----			% of NDF
Bt Hybrids				
35R58	43.7	2.3	31.7	35.2
DKC44-42	43.7	2.0	34.1	35.6
DKC53-32	43.7	1.9	32.8	36.7
N2555Bt	43.6	2.3	32.5	34.9
N3030Bt	43.1	2.1	33.3	35.4
N45-A6	45.9	2.3	30.6	35.7
Non-Bt Hybrids				
35R57	42.4	2.2	32.4	36.3
DK440	44.0	2.2	34.7	35.8
DK537	44.1	2.0	33.1	35.8
N2555	43.1	2.3	32.5	35.2
N3030	43.5	2.2	32.8	35.0
N45T5	45.6	2.3	30.6	32.9
LSD (0.05)	NS	0.3	2.4	NS