Forage Research Update
Wisconsin - Leaf Loss Timing Affects Corn Forage Quality Loss
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Hail damage can be a serious problem on corn grown for silage. Experiments were conducted during 2000, 2001, and 2002 at Arlington and Marshfield, WI, and State College, PA. Defoliation treatments were applied at V7, V10, R1 (silking), and R4 (dough). At V7, 100% of the emerged leaf area was removed using shears. At V10, 50 and 100% of the emerged leaf area was removed. Partial leaf removal treatments were applied by measuring from the leaf tip and cutting the leaf end. At R1 and R4, 25, 50, and 100% of the emerged leaf area was removed. The control was a non-defoliated treatment. Plots were harvested shortly after the 50% kernel milk stage of the untreated control.

Corn quality measures responded similarly to defoliation treatments across most environments. Increasing defoliation at V7 and V10 stages did not affect corn forage quality at harvest, but reduced forage quality when defoliation occurred at the R1 and R4 stages of development. The largest differences in NDF, ADF, and digestibility (IVTD) occurred at R1 and R4. Starch content was most affected when defoliation occurred at silking. The response of NDF digestibility to defoliation was inconsistent. These changes in forage quality resulted in decreased milk per ton and milk per acre with increasing defoliation in most environments.

Table 1. *Corn forage quality response to defoliation at 4 growth stages.*

Stage	% Leaf Defoliation	CP	ADF	NDF	IVTD	Starch	NDFD	Milk/ton	Milk/ac
Control	0	7.1	23.7	43.6	81	32	58	3,260	26,340
7 Leaves (V7)	100	7.3	23.0	42.3	82	33	58	3,280	22,240
10 Leaves (V10)	50	7.2	23.3	42.7	82	33	58	3,280	22,590
	100	7.4	24.8	43.5	81	31	57	3,200	15,180
Silking (R1)	25	7.1	24.5	44.3	81	31	57	3,200	23,490
	50	7.3	24.6	44.7	81	31	57	3,200	21,430
	100	7.4	35.8	61.1	73	14	56	2,600	6,340
Dough (R4)	25	7.2	24.3	44.5	81	31	58	3,220	24,380
	50	7.1	23.8	43.9	81	33	58	3,260	23,310
	100	6.9	29.0	51.2	79	29	59	3,060	14,730
LSD (0.05)	-	0.2	1.3	1.7	1	2	1	40	1,340