2009 Corn Hybrid Evaluation in Massachusetts

Stephen J. Herbert and Masoud Hashemi

Corn silage hybrids were tested at the University of Massachusetts Crops Research and Education Center Farm, in South Deerfield, Massachusetts in 2009. Hybrids were divided into three groups based on relative maturity (RM) provided by the seed companies; group I, early maturity group (78-89 days), group II, mid maturity group (90-100 days), and group III, full season group (101-117 days). In Massachusetts we are encouraging farmers to use shorter season corn hybrids in conjunction with earlier planting, so that together they allow for early planting of cover crops, which maximizes nitrogen retention after corn and fall manure application. Our multi-year research studies have shown that well-established cover crops, planted by September 1 (achieving 1100 GDDs) can accumulate more than 100 lb N per acre.

All hybrids were planted on May 4th. A cone type distributor mounted on a double disc opening corn planter was used in a conventionally prepared seed bed. Plots were planted at the rate of 32,000 seeds per acre in 30 inch rows. Plots consisted of 3 rows with a length of 25 feet and replicated 4 times. The site received 600 lb/acre of 15-8-12 prior to planting. Pre-sidedress nitrate test (PSNT) taken on June 17 indicated a deficient level of nitrogen therefore, 75 pounds of N per acre in the form of Calcium Ammonium Nitrate (27% N) was applied to all plots. Weeds were controlled by pre-emergence application of 2 quarts of Bicep II Magnum per acre.

Corn hybrids were harvested by hand at different dates; group I on September 1, group II on September 8, and group III on September 15. Harvested hybrids were evaluated for yield of silage and ear, percentage ears, and moisture content. Ten feet of the central row from each plot was harvested for yield estimation. Silage yields were adjusted to 70% moisture and ear corn yields to 25% moisture. Moisture content is reported as a percentage of corn harvested as silage.

Table 1: Climate Data for 2009 in South Deerfield, MA.

	GDD[1]			Rainfall (inches)		
	2009	Norm	Deviation	2009	Norm	Deviation
May (27 days)	196	262	- 66	4.27	3.81	+ 0.46
Jun	412	533	- 121	5.16	3.75	+ 1.41
Jul	521	697	- 176	9.88	3.91	+ 5.97
Aug	603	638	- 35	6.43	4.10	+ 2.33
Sep						
Group I	0	0	0	0.00	0.00	0.00
Group II	92	109	- 17	0.00	0.85	- 0.85
Group III	164	199	- 35	0.50	1.79	- 1.29
Total	**1988[2]**	**2349**	**- 361**	**26.24[3]**	**20.24**	**+ 6.00**

[1] Growing Degree Days was calculated as: GDD = $\sum(T_{max} + T_{min})/2 - 50$

[2] Total GDD for group III maturity groups. Total GDD for groups I and II were 1732 and 1896, respectively.

[3] Total rainfall for group III maturity group. Total rainfall for groups I and II was 25.74 inches.

Climate data for the evaluation site is presented in Table 1. In 2009, the corn crop experienced exceptionally cool condition during the entire growing season. For example, just in the first three months of May, June, and July, the 2009 growing season collected 363 GDD below normal, and for the entire growing season the total GDDs were 398, 415, and 433 below normal for maturity groups I, II, and III, respectively (Table 1). Also, from planting time (May 4th) until September 1st, the site received about 25.74 inches of precipitation which is 10.2 inches more than the norm for this location. The exceptional combination of cool and wet weather throughout the growing season in general and early vegetative growth stages in particular in 2009, reduced silage and ear yield potential in all tested hybrids (table 2 and table 3). Reduction in ear yield was more severe relative to stover yield therefore; ear% was significantly lower than previous seasons for this location.

Summary of mean comparison of yield, ear %, and ear %, for the three maturity group hybrids is shown in Table 2. Silage yield and ear percentage for all hybrids tested in 2009 are presented in Table 3.

Considering the unusual weather conditions throughout almost the entire growing season, the yield performance of majority hybrids was satisfactory. However, the early maturity hybrids in general did not performed as well as the full season maturity groups. Perhaps this is because full-season hybrids took advantage of the better growing conditions after fertilization.

Table 2: Mean comparison of yield, ear %, and moist %, for three maturity group hybrids planted on May 4th, 2009 and harvested at 50% milk line.

Maturity	Silage[1] T/ac	Earcorn[2] T/ac	Pctear %	Silking days[3]
Group I	22.9 a[†]	5.1 a	56 a	83 a
Group II	23.9 a	5.7 a	60 b	85 b
Group III	29.4 b	6.9 b	59 b	88 c

[1]Silage @70% moisture [2]Earcorn @ 25% moisture
[3]Days after planting
[†] Means with the same letter within each column are not significantly different at $P \leq$

Table 3: Yield, moist%, and ear percentage for all hybrids planted on May 4th, 2009 and harvested at 50% milk line.

Brand	Hybrid	Maturity Group	Silage [1] T/ac	Moist %	Earcorn[2] T/ac	Emoist %	Pctear %	Silk DAP
Seedway	E197RR	I	18.9	68	4.5	51	60	82
Seedway	SW2170	I	22.8	72	5.1	53	56	83
Seedway	E224RR	I	23.6	68	5.7	53	60	82
Doebler's	P253X	I	22.4	70	5.0	56	56	83
Doebler's	P333X	I	26.2	70	5.6	55	54	83
Agrisure(NK)	N20R-GT	I	23.5	72	4.8	54	51	84
Mean			**22.9**	**70**	**5.1**	**54**	**56**	**83**
DEKALB	DKC 55-44	II	22.8	71	5.6	53	62	84
DEKALB	DKC 48-37	II	23.6	68	5.9	48	63	82
DEKALB	DKC 48-46	II	25.3	69	6.3	51	62	81
DEKALB	DKC 45-82	II	24.6	68	3.1	50	62	82
Dairyland	HidF-3195Q	II	26.0	69	6.2	51	60	86
Mycogen	TMF2L414	II	26.4	71	5.9	53	55	88
Mycogen	TMF2N494	II	21.0	71	4.7	58	56	88
Mycogen	TMF94	II	21.8	70	5.0	56	57	89
Doebler's	362GR	II	23.4	65	6.0	49	64	82
Mean			**23.9**	**69**	**5.7**	**52**	**60**	**85**
DEKALB	DKC 67-87	III	31.7	69	6.9	51	55	92
DEKALB	DKC 61-66	III	26.1	68	6.5	49	63	87
DEKALB	DKC 52-59	III	27.3	66	7.1	48	65	88
DEKALB	DKC 54-49	III	24.5	66	6.2	45	63	85
DEKALB	DKC 63-42	III	33.0	67	8.3	46	62	87
Dairyland	HidF- 3110	III	32.3	71	6.3	51	49	92
Dairyland	STEALTH-8208	III	31.8	71	6.7	52	52	90
Agrisure(NK)	N53W3	III	28.9	67	6.9	46	60	87
Mycogen	TMF2R521	III	28.8	67	7.3	45	64	84
Mean			**29.4**	**68**	**6.9**	**48**	**59**	**88**
Overall Mean			**25.4**	**69**	**5.9**	**51**	**58**	**85**
CV (%)			12.8	2.4	14.0	5.4	4.8	1.7

[1]Silage @ 70% moisture [2]Earcorn @ 25 % moisture