

# 2010 Massachusetts Silage and Grain Corn Evaluation

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Corn silage hybrids were evaluated for silage and grain yield at the University of Massachusetts Crops and Animal Research and Education Center, in South Deerfield, Massachusetts. Hybrids were divided into three groups based on relative maturity (RM) provided by the seed companies; group I, early maturity group (85-94 days), group II, mid maturity group (95-100 days), and group III, full season group (101-115 days). In Massachusetts we are encouraging farmers to use shorter season corn hybrids along with earlier planting so that together these management practices can provide the opportunity for early planting of cover crops, which maximizes N recovery 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 6th. 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 33,000 seeds per acre in 30 inch rows. Plots consisted of 3 rows with a length of 50 feet and replicated 4 times. The site received 660 lb/acre of 15-8-12 prior to planting. Pre-sidedress nitrate test (PSNT), taken on June 15, indicated that a sufficient level of nitrogen existed in the research site therefore no sidedress N was applied. Weeds were controlled by pre-emergence application of 2 quarts of Bicep II Magnum per acre.

Ten feet of the central row was harvested by hand at 50% milk line for evaluation of silage yield. Group I hybrids were harvested on August 30 and groups II and III were harvested only 4 days later which, compared to the norm for this location, is considered early. The early harvesting of groups II and III was mainly due to the relatively dry condition that occurred during the month of August with only 1.72" precipitation compared to the norm in this location which is 4.10" (Table 1). Harvested hybrids were evaluated for silage and ear yield, percentage ears, and moisture content. Silage yield was adjusted to 70% moisture and ear corn yield to 25% moisture.

**Table 1:** Climate data for 2010 in South Deerfield, MA.

	GDD <sup>1</sup>			Rainfall (inches)		
	2010	Norm	Deviation	2010	Norm	Deviation
May (25 days)	286	253	33	2.07	3.79	- 1.72
Jun	568	533	35	3.90	3.75	+ 0.15
Jul	741	697	44	4.13	3.91	+ 0.22
Aug	635	638	- 3	1.72	4.10	- 2.38
<b>Total</b>	<b>2230</b>	<b>2121</b>	<b>109</b>	<b>11.82</b>	<b>15.55</b>	<b>- 3.73</b>

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

In October, another ten feet was harvested from the central row of each plot to evaluate grain yield of all corn hybrids. Ears were handpicked on October 7, October 11, and October 14 for group I, group II, and group III, respectively. Ears were dried in a forced-air oven before they were shelled by hand. Harvested hybrids were evaluated for grain yield, cob to ear ratio, and grain moisture content at harvest. Grain moisture was measured using a Dickey John® mini GAC grain moisture tester. Grain yield was adjusted to 15.5% moisture.

Climate data for the evaluation site is presented in Table 1. In 2010 the corn crop experienced drier conditions, especially in August, which coincides with grain filling stage. The late dry condition had less negative impact on shorter-season hybrids compared to full-season hybrids. As a result, the shorter-season maturity hybrids in general performed better compared to full-season maturity groups. Shorter-season hybrids produced about 5% higher percent ear which can be translated as higher silage quality. Our past evaluations in 2007-2009 indicated that when corn is planted for grain production, the late maturity hybrids most often out yield shorter-season hybrids. In 2010, as mentioned above, due to dry conditions that occurred during grain filling stage, shorter-season hybrids on average performed as well as the mid and late maturity groups.

Summary of mean comparisons of silage and grain yield, ear percentage, and grain moisture content for the three hybrid maturity groups is shown in Table 2. The result of silage and grain yield, ear percentage, grain moisture, and silking date for all hybrids tested in 2010 are presented in Table 3.

**Table 2:** Mean comparisons of silage and grain yield, ear %, and grain moisture, for three maturity group hybrids planted on May 6<sup>th</sup>, 2010 and harvested at 50% milk line (for silage) and about 20% grain moisture for grain production.

Maturity	Silage <sup>1</sup> T/ac	Earcorn <sup>2</sup> T/ac	Pctear %	Grain Bu/ac <sup>3</sup>	Grain moisture	Cob/Ear %	Silk Date DAP <sup>4</sup>
Group I	29.4 ab <sup>†</sup>	7.3 a	62.3 a	189.3 a	18.2 b	11.7 a	69.4 c
Group II	28.3 b	6.8 b	59.8 b	185.6 a	20.3 a	10.6 b	71.3 b
Group III	30.4 a	7.0 b	57.1 c	182.3 a	20.6 a	11.4 a	73.9 a

<sup>1</sup>Silage @70%moisture    <sup>2</sup>Earcorn @ 25% moisture    <sup>3</sup>grain @ 15.5% moisture

<sup>4</sup>Days After Planting

<sup>†</sup> Means with the same letter within each column are not significantly different at  $P \leq 0.05$ .

**Table 3:** Silage and grain yield, ear %, and grain moisture, for three maturity group hybrids planted on May 6<sup>th</sup>, 2010 and harvested at 50% milk line (for silage) and about 20% grain moisture for grain production.

Brand	Hybrid	Maturity group	SILAGE				GRAIN		
			silage <sup>1</sup> T/ac	earcorn <sup>2</sup> T/ac	pctear %	silk <sup>4</sup> DAP	grain <sup>3</sup> Bu/ac	grain moisture %	cob/ear %
TA Seeds	TA290-11 (CB/LL)	I	29.5	7.7	65	67	208	18	13
Dairyland	ST-9789 (RR)	I	30.0	7.7	64	70	208	19	9
Agrisure (NK)	N20R-GT	I	28.6	6.6	58	72	152	18	13
<b>Mean</b>			<b>29.4</b>	<b>7.3</b>	<b>62.3</b>	<b>69.4</b>	<b>189.3</b>	<b>18.3</b>	<b>11.7</b>
TA Seeds	TA501-161	II	30.3	6.5	53	76	183	21	11
Dairyland	ST-3195Q (RR)	II	27.8	6.3	56	74	172	20	10
DEKALB	DKC 46-07	II	28.2	7.3	66	71	206	20	9
DEKALB	DKC 46-6	II	26.0	6.1	58	69	193	21	10
DEKALB	DKC 49-94	II	27.8	6.5	58	73	181	21	12
DEKALB	DKC 45-52	II	30.1	7.8	65	67	181	19	11
DEKALB	DKC 48-37	II	27.8	6.9	62	70	183	20	11
<b>Mean</b>			<b>28.3</b>	<b>6.8</b>	<b>59.8</b>	<b>71.3</b>	<b>185.6</b>	<b>20.3</b>	<b>10.6</b>
TA Seeds	TA788-13 (YGV T3)	III	28.2	6.3	56	72	164	23	13
Dairyland	ST- 9703Q	III	29.2	6.4	54	74	182	20	11
DEKALB	DKC 52-59 (VT3)	III	26.9	6.5	60	75	162	18	13
DEKALB	DKC 54-16 (VT3)	III	31.8	7.6	59	75	192	19	10
DEKALB	DKC 57-50 (VT3)	III	29.5	6.7	56	75	174	24	13
DEKALB	DKC 59-64	III	33.3	7.2	54	75	185	21	11
DEKALB	DKC 61-69	III	32.4	7.3	56	74	199	21	11
DEKALB	DKC 63-42	III	32.2	7.2	56	75	187	23	11
DEKALB	DKC 63-84	III	32.0	7.1	55	77	183	21	11
DEKALB	DKC 50-35	III	28.0	7.2	64	68	195	17	10
<b>Mean</b>			<b>30.4</b>	<b>7.0</b>	<b>57.1</b>	<b>73.9</b>	<b>182.3</b>	<b>20.7</b>	<b>11.4</b>
<b>Overall Mean</b>			<b>29.4</b>	<b>7.0</b>	<b>59.7</b>	<b>71.5</b>	<b>185.7</b>	<b>19.8</b>	<b>11.2</b>
CV (%)			12.3	14.3	4.6	3.4	15.2	7.9	8.6

<sup>1</sup>Silage @70%moisture

<sup>2</sup>Earcorn @ 25% moisture

<sup>3</sup>grain @ 15.5% moisture

<sup>4</sup>Days After Planting