2013 Massachusetts Corn Hybrid Evaluation

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Twenty corn hybrids were evaluated for silage and grain yield at the University of Massachusetts Crops Research and Education Center Farm, in South Deerfield, in 2013. Each entry hybrid was assigned to one of three groups based on its relative maturity (RM) provided by the seed companies; Group I, shorter-season group (88-94 days), group II, mid-maturity group (95-100 days), and group III, full-season group (101-114 days). All hybrids were planted on May 7, 2013. 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 37,000 seeds per acre in 30 inch rows.   Weeds were controlled using glyphosate.

Plots consisted of 3 rows, 25 feet long and 2.5 feet wide, and replicated 4 times. Silage and grain plots were separate but in adjacent fields at the same site. The experimental sites had no manure application history and soil organic matter was 1%. Research plots received 600 lb/acre of 15-8-12 fertilizer and 4000 lb/acre of lime prior to planting. Pre-sidedress soil nitrate test (PSNT) taken in early July indicated insufficient available nitrogen so 400 lb/acre calcium ammonium nitrate (27% N) was applied as sidedress .

Ten foot sections of the central rows were harvested by hand for evaluation of silage yield. Shorter and mid-season hybrids were harvested on August 30, and full-season hybrids were harvested by replication on September 12, 13, and 17. Harvested hybrids were evaluated for silage and ear yield, percentage ears, and moisture content. Silage yield was adjusted to 70% moisture and earcorn yield to 25% moisture.

The grain plots were harvested on November 21 - 25. Ten foot sections of ears were hand harvested and shelled to determine moisture content and yield. Moisture was measured using a DICKEY-John® mini GAC® moisture tester.

Climate data for the evaluation site is presented in Table 1. Overall, in 2013 the corn crop experienced a favorable growing season.   Temperatures were above the norm for this location. Rainfall was a bit below average, but was plentiful later in the season.

Table 1: Climate data for 2013 in South Deerfield, MA.

	GDD[1]			Rainfall (inches)		
	2013	**Norm**	**Deviation**	**2013**	**Norm**	**Deviation**
May	301	185	116	2.01	3.79	-1.78
Jun	529	483	46	3.10	3.75	-0.65
Jul	790	645	145	4.87	3.91	0.96
Aug	591	595	-4	4.10	4.10	0
Total	**2211**	**1908**	**303**	**14.08**	**15.55**	**-1.47**

Results for corn silage yields are given in Table 1. Hybrids are arranged according to their reported days to maturity. Average yields for the three maturity groups are shown in bold. Silage yield ranged from 24.2 ton/ac to 37.1 ton/ac, with the full-season hybrids significantly outperforming the short and mid-season hybrids. However, shorter season and mid-season hybrids yield similarly. Earcorn yielded significantly more on the full season hybrids than the others. Percent ear is sometimes given as an indicator of silage quality, with a higher ear percentage indicating higher energy content of the silage. The shorter- season hybrids had higher ear percentages than the mid- and full- season hybrids. Plant population is given as a matter of interest. Significant differences in plant population among hybrids were not observed.

Table 1: Corn silage yield in 2013

Hybrid Days to maturity	plants/ac (000's)[z]	Silage ton/ac[y]	Earcorn ton/ac[x]	% ears
TA 333-22DPRIB91	29	24.7	6.5	66.0
DKC 43-10RIB 93	31	27.6	7.4	66.8
DKC 43-48RIB 93	34	27.7	7.4	66.4
P9917AMX 93	29	24.2	6.4	66.5
Shorter- Season (<95 days)		**26.0b[v]**	**6.9b**	**66.4a**
DKC46-20RIB 96	33	24.6	6.1	62.6
TA 477-31 97	30	27.7	6.5	58.2
TA 484-28 98	33	30.1	7.5	62.7
P0533AM1 98	33	27.0	7.0	65.1
DKC 49-29RIB 99	31	26.8	6.6	62.2
Mid-Season (95-100 days)		**27.2b**	**6.8b**	**62.2b**
DKC 52-04 102	34	30.8	8.2	66.6
DKC 53-56RIB 103	31	32.3	8.6	67.1
DKC 57-50 107	34	33.3	8.5	64.1
DKC 57-75RIB 107	31	32.5	8.5	65.7
TA5 83-22DP 108	34	37.0	9.4	63.7
DKC 61-21RIB 111	35	37.1	8.9	60.0
DKC 61-88RIB 111	32	35.9	9.2	64.2
DKC 62-08RIB 112	31	32.7	8.4	64.2
DKC 62-97RIB 112	30	32.0	8.2	63.6
TA 683-13DP 112	35	35.8	8.9	62.4
P1449XR 114	32	35.9	8.3	57.5
Full Season (>100 days)		**34.1a**	**8.7a**	**63.6b**

[z] Plots were seeded at 37,000 seeds per acre assuming 90% germination and survival to achieve density of 33,000 plants per acre.

[y] Silage yield is reported as tons per acre of 70% moisture and [x] Earcorn is reported at 25% moisture. [v]

Means with the same letter within each column are not significantly different at *P ≤ 0.05*.

Results of grain harvest yields are shown in Table 2. As was the case for the silage yields full season hybrids yielded better than short season hybrids however, the yield difference between mid-maturity and full-season hybrids were not significant. Even with a late November harvest, the grain moisture content was greater as the days to maturity of the hybrid increased. If cost of drying is a factor, then cost of drying may offset slightly lower yield (probably not 37 bu per acre lower yield, though).

Table 2. Grain yield in 2013

Hybrid	Days to maturity	Plants/ac (000's)^z	Grain bu/ac^y		Grain % moisture^x	
TA 333-22DPRIB	91	37	226		15.3	
DKC 43-10RIB	93	34	223		15.1	
DKC 43-48RIB	93	36	265		15.2	
P9917AMX	93	34	211		15.7	
Short Season (<95 days)		**36**	**231**	**b**	**15.3**	**a**
DKC 46-20RIB	96	34	244		15.9	
TA 477-31	97	37	284		15.9	
TA 484-28	98	37	257		15.6	
P0533AM1	98	37	273		17.3	
DKC 49-29RIB	99	32	226		15.9	
Mid-Season (95-100 days)		**36**	**257**	**a**	**16.1**	**b**
DKC 52-04	102	33	255		16.0	
DKC 53-56RIB	103	34	224		16.1	
DKC 57-50	107	33	261		17.0	
DKC 57-75RIB	107	33	240		17.0	
TA583-22DP	108	35	309		16.3	
DKC 61-21RIB	111	35	292		18.2	
DKC 61-88RIB	111	36	295		16.5	
DKC 62-08RIB	112	35	296		17.5	
DKC 62-97RIB	112	32	274		17.9	
TA 683-13DP	112	31	269		18.0	
P1449XR	114	32	241		20.1	
Full Season (>100 days)		**34**	**269**	**a**	**17.2**	**c**

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^{z} Plots were seeded at 37,000 seeds per acre assuming 90% germination and survival
  to achieve density of 33,000 plants per acre.
^{y} Grain yield is reported as bushels (56 lb) per acre at 15.5% moisture.
^{x} Percent moisture is measured at harvest using a DICKEY-John® mini GAC® moisture tester.
^{w} Means with the same letter within each column are not significantly different at *P ≤ 0.05.*