

2015 Massachusetts Corn Hybrid Evaluation

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Many hybrids are available for farmers wanting to plant corn for silage. Some will perform better than others and some are better suited to the local climate. This report includes yield data for 20 hybrids which were submitted for trial by Doeblers and DeKalb. The twenty corn hybrids were evaluated for silage and grain yield at the University of Massachusetts Crops Research and Education Center, in South Deerfield, Massachusetts in 2015. Soil was a Hadley very fine sandy loam. Each hybrid was assigned to one of three groups based on relative maturity (RM) provided by the seed companies; Group 1, early maturing (RM 88-94 days), group 2 mid maturity (RM 95-100 days), and group 3, full season (RM 101-112 days). All hybrids were planted on May 12, 2015. 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 35,000 seeds per acre in 30 inch rows. Weeds were controlled using glyphosate herbicide.

Plots consisted of 3 rows, 25 feet long, replicated 4 times. The site received 80 lb/acre of nitrogen (calcium ammonium nitrate (CAN)) prior to planting, as recommended by an April soil test. Plots were side-dressed with 160 lb N at the beginning of July as recommended by a pre side-dress soil nitrate test.

Ten foot sections of the central rows were harvested by hand for evaluation of silage yield. Early maturing hybrids were harvested September 10 and 11, mid-season hybrids were harvested September 14 and 15, while full-season hybrids were harvested between September 16 and 25. 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.

Climate data for the evaluation site is presented in Table 1. Overall, in 2015 the corn crop experienced a favorable growing season, though May was hotter and drier than the norm. Temperature and rainfall were both above the norm for the experimental location over the growing season.

Table 1: Climate data for 2015 in South Deerfield, MA.

	GDD ¹			Rainfall (inches)		
	2015	Norm ²	Deviation	2015	Norm ²	Deviation
May	418	226	192	1.18	3.46	-2.28
Jun	450	485	-35	7.58	4.41	3.17
Jul	659	636	23	5.39	3.65	1.74
Aug	665	589	76	4.33	3.62	0.71
Sept	505	342	163	6.81	4.09	2.72
Total	2697	2278	419	25.29	19.23	6.06

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

² Norm is based on average of 18 years, 1997-2014, at nearby Orange airport, Orange, MA

Corn silage yields are given in Table 2. Hybrids are arranged according to reported days to maturity. Silage yield based on 70% moisture averaged 38 tons/acre and ranged from 28 ton/ac to 47 ton/ac in individual plots. Summary of relationships between days to maturity and silage yields are shown in bold. Full season corn out yielded early maturing corn by an average of more than 4 ton/acre. Regardless of maturity group all hybrids tested in 2015 yielded very high compared to previous years. Harvests of ten of the hybrids were repeated on adjacent rows, and results were confirmed.

Earcorn, as measured separately from silage, yielded higher in the full-season hybrids than in the other two categories. Percent ears (weight of ears as a percent of total plant biomass) is sometimes given as an indicator of quality, with a higher ear percentage connoting a higher quality. The early- and mid- season hybrids had higher ear percentages even though they had lower total earcorn yields.

Table 2. Silage corn yield 2015.

Harv Date	Days to Maturity	Harvest Moisture ^z	Silage Ton/ac ^y	Earcorn Ton/ac ^x	Pct Ears ^w	Hybrid
9/9	93	61 %	35	9	67	DeKalb DKC43-48RIB
9/9	94	60	35	10	71	DeKalb DKC44-13RIB
9/15	96	60	36	10	69	DeKalb DKC46-20RIB
9/15	99	61	33	9	69	DeKalb DKC49-72RIB
9/15	99	62	38	10	66	Doebler Doebler® 3916GRQ
9/15	100	63	36	10	68	DeKalb DKC50-82RIB
9/17	101	61	39	11	69	Doebler RPM® 4115AM™
9/17	102	62	39	10	66	DeKalb DKC52-30RIB
9/17	103	61	39	10	67	Doebler RPM® 4315 AMT™
9/17	104	59	38	10	68	DeKalb DKC54-38RIB
9/17	105	64	41	11	68	Doebler RPM® 563HXR™
9/17	105	60	35	9	64	Doebler Doebler® 554GRQ ^v
9/17	107	64	39	10	67	DeKalb DKC57-75RIB
9/17	107	62	37	10	66	DeKalb DKC57-92RIB
9/25	108	61	45	11	61	Doebler RPM® 604HRQ™
9/25	110	60	40	10	65	DeKalb DKC60-67RIB
9/25	110	62	35	9	67	Doebler RPM® 5015AM™
9/25	111	60	45	12	65	DeKalb DKC61-88RIB
9/25	111	64	41	11	66	Doebler RPM® 5125AM™
9/25	112	58	41	11	67	DeKalb DKC62-08RIB
LSD ^u		2.6	5	2	2	
Early-maturing (<95 days)			35.1 b^t	9.7 b	69 a	
Mid-maturity (95-100 days)			35.4 b	9.6 b	68 a	
Full-Season (>101 days)			39.5 a	10.5 a	66 b	

^z Harvest moisture percent was not different among the different harvest dates; the timing of the harvests was consistent for the three maturity categories.

^y Silage yield is reported as US tons per acre of 70% moisture plant material at harvest .

^x Earcorn is reported as US tons per acre of ears in the husk at 25% moisture.

^w Percent ears is reported on a dry weight basis.

^v 2014 Seed. This hybrid was a top performer in 2014. Plant population using the year old seed was the lowest of the hybrids planted.

^u LSD , least significant difference is the smallest difference between any two values in the above column in which a difference is considered to be of statistical significance at odds of 19 in 20.

^t Means in bold with the same letter within each column are not significantly different at $P \leq 0.05$.

Comparisons of grain yields are given in Table 3. Hybrids are arranged according to reported days to maturity for silage. Summary of relationships between days to maturity and grain yields are shown at the bottom of the table in bold. Note that any effects of “days to maturity” may be related to choice of seed the companies opted to send for trials. Grain yields averaged between 213 bu/ac and 303 bu/ac, with full season hybrids out yielding short and mid-season

hybrids overall. There was considerable yield variability among the 4 plots of each hybrid. For two hybrids to show statistically significant yield differences, the average difference must exceed 42 bushels/ acre. Hybrids “9” and “20” are the same hybrid, but the 2014 seed appeared to out-yield the 2015 seed by 23 bu/ acre (not statistically significant given the variation among replicates). Moisture content of the grain at harvest was related to “days to maturity”, with the short season hybrids averaging lowest moisture and the full season hybrids averaging highest moisture. Half the plots were harvested December 16 and half were harvested December 21. Overall, average moisture content dropped from 17.9% on December 16 to 17.4% on December 21. Moisture percentages shown are averages of the two harvest dates.

Table 3. Grain corn yield, 2015 season, as harvested December 16 and 21, 2015.

Hybrid Number	Days to maturity	bu/ac @ 15.5% moist.	moisture Percent ^z	Hybrid	
1	93	217	16.5	DeKalb	DKC43-48RIB
2	94	212	17.1	DeKalb	DKC44-13RIB
3	96	236	17.3	DeKalb	DKC46-20RIB
4	99	220	16.9	DeKalb	DKC49-72RIB
13	99	265	17.3	Doebler®	554GRQ
5	100	249	17.3	DeKalb	DKC50-82RIB
14	101	268	17.6	DeKalb	DKC54-38RIB
6	102	261	17.3	DeKalb	DKC57-75RIB
15	103	281	17.2	Doebler	RPM® 4315AMT™
7	104	275	17.7	DeKalb	DKC54-38RIB
16	105	297	18.3	Doebler	RPM® 563HXR™
8	107	246	18.5	DeKalb	DKC57-75RIB
9	107	272	17.6	DeKalb	DKC57-92RIB
20	107	295	17.7	DeKalb	DKC57-92RIB- 2014 seed
17	108	300	17.9	Doebler	RPM® 604HRQ™
10	110	270	17.6	DeKalb	DKC50-82RIB
18	110	242	18.6	Doebler	RPM® 5015AMT™
11	111	303	17.6	DeKalb	DKC61-88RIB
19	111	278	18.7	Doebler	RPM® 5125AMT™
12	112	270	18.6	DeKalb	DKC62-08RIB
LSD ^y		42	0.7		
Short Season (<95 days)		217	16.8		
Mid-Season (95-100 days)		243	17.2		
FullSeason (>100 days)		275	17.9		

^z Moisture was measured at the time of harvest using a Dickey-john® mini GAC® moisture tester.

^y LSD , least significant difference is the smallest difference between any two values in the column above it which is considered to be of statistical significance at odds of 19 in 20.