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University of Kentucky
College of Agriculture,
Food and Environment
Agricultural Experiment Station

Kentucky Corn Silage Hybrid Performance Report, 2018

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Objective

The Silage Corn Hybrid Performance Test is intended to provide unbiased forage yield and quality data for corn hybrids commonly grown for silage in Kentucky.

General Procedures

Hybrids were evaluated for silage performance on cooperating farms. Representatives from seed companies submitted hybrids of their choosing. Most companies submitted only two (2) hybrids. One company supplies a third hybrid that serves as a check.

University of Kentucky personnel planted the hybrid seeds. Farmers applied the soil fertility and pest management. University personnel harvested, weighed, chopped and packaged corn for quality analysis. University personnel conducted the statistical analyses and final reporting of hybrid performance.

Every effort was made to conduct the tests in an unbiased manner according to accepted agronomic practices. In some cases, fertilizer rates are above recommendations. Hybrids were arranged in a randomized complete block design with three replications at each farm. Hybrid seed was planted with standard planters at a target seeding rate near 30,000 seeds per acre. Fields were monitored for pests.

When most hybrids were near 35% dry matter (65% moisture), two 10-ft sections of each hybrid were harvested by hand from each plot. The entire harvested corn sample was weighed. All whole plants from each hybrid were processed through a silage chopper and a subsample was collected.

Forage quality analyses and dry matter determination were from composite chopped samples of each hybrid at each location and were analyzed by Dairy One Forage Lab, who also calculated milk yield.

Hybrid performance reported here includes silage yield adjusted to 35% dry matter, milk yield per ton and per acre, net energy for gain and for lactation, in vitro true digestibility, crude protein, acid detergent fiber, neutral detergent fiber, and total digestible nutrients.

Silage yield and milk yield per acre for each hybrid was separated using the Least Significant Difference (or LSD). The LSD is a method of separating hybrid performance from field variability. Hybrids with yields within one (1) LSD of each other have a very good chance of performing similar to each other next year.

2018 Season Comments

Total silage yield and milk yield are the two most important performance numbers to compare across hybrids.

The 2018 growing season started wet, was extremely hot and borderline dry for part of July and very wet around harvest. The wet weather delayed planting and complicated harvest. Stands at Mercer County were excellent but yields were lower. Stands were reduced at Mason County and were more variable, but yields were excellent, with the highest average yield of all three locations. Gray leaf spot (GLS) and both rusts together (Rust) were assessed at Green and Mason County. Disease pressure was much lower overall this season, even with the wet weather. Disease pressure was relatively low at all sites and a foliar fungicide likely would not have increased yields. **Note:** Gray leaf spot is caused by *Cercospora zea-maydis*, common rust is caused by *Puccinia sorghi* and southern rust is caused by *Puccinia polysora.*

We thank our farmer cooperators for hosting the plots and helping with planting, management and harvest of the plots.

Research Conducted by:

Nick Roy, Adair County; Will Stallard, Lincoln County; Ricky Arnett, Green County; Matthew Campbell, Mason County; Linda McClanahan, Mercer County; Jonathan Oakes, Russell County; Jerry Little, Boyle County; Colby Guffey, Clinton County; Jay Hettmansperger, Garrard County; Keenan Bishop, Franklin County; Tommy Yankey, Anderson County; Adam Probst, Woodford County; Clay Stamm, Clark County; Philip Konopka, Lewis County; David Appleman, Bracken County; April Wilhoit, Fleming County; Samantha Woerner, Roberston County; Statistical Analysis performed by Julia Santoro and Chad Lee, UK Grain and Forage Center of Excellence

Table 1. Combined Location Average

Company	Hybrid	Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	TDN	ADF	NDF	Milk Yield[4] lb/T	lb/A	Disease Rates[5] GLS	Rust
Becks	6622AM	18.1	76	7.5	69	27	47	2,739	17,279	1.5	0.7
Becks	6886VR	20.6	78	7.9	72	24	42	2,858	21,103	2	1.3
Caverndale	CF1033VIP 310	16.3	68	8.1	61	34	57	2,392	13,634	1.7	1.3
Caverndale	CF853VIP 3110	20.2	74	8.7	67	30	50	2,737	19,638	1.6	0.9
Channel	210-98STXRIB	**24.5**	79	7.5	73	23	41	2,886	24,682	1.5	1.3
Channel	212-20VT2PRIB	20.4	77	8	70	26	44	2,796	20,058	1.5	0.8
CHECK	CHECK	23.7	79	7.6	72	25	43	2,948	**24,763**	1.3	1.2
Masters Choice	MCT6653	19.5	78	7.8	71	24	42	2,908	20,085	1.3	1.2
Masters Choice	MCT6733	23.3	77	7.6	70	26	44	2,790	22,929	1.5	1.5
Pioneer	P1637AM	21.2	78	7.7	71	26	45	2,969	22,067	1.5	1.7
Pioneer	P2089AML	22.8	72	7.5	65	28	49	2,552	20,210	1.5	1.2
Stewart Seed	17DP387	23.2	78	7.8	72	25	44	2,924	23,872	1.7	1.2
Stewart Seed	8E623RIB	19	77	7.9	70	25	44	2,821	19,303	1.5	1.5
Syngenta	NK1066	24.1	77	7.3	69	27	45	2,884	24,337	1.5	**2.2**
Syngenta	NK1808	18.1	74	6.9	66	29	49	2,596	16,680	**2.2**	1.2
Terral	25BHR89	19.1	76	8.2	68	27	47	2,866	19,880	1.7	1.3
Terral	28BHR18	23	76	8.7	69	28	46	2,840	24,058	1	0.8
	p value	0.0022							<.0001	0.0002	0.0551
	LSD (0.10)	2.25							2,416	0.2	0.5
	Average	18.9	76	7.8	69	27	46	2,795	20,858	1.6	1.2

[1] Percent dry matter (DM) represents the corn forage sample at harvest. Silage yields were adjusted to 35% DM; highest numerical yield is bold with gray box; bold yields are not significantly different from highest yield.
[2] In vitro True Digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid. Quality measurements are based on dry weight and calculated from composite samples at each site.
[3] Higher crude protein (CP) and total digestible nutrients (TDN) values indicate better forage quality. Lower acid detergent fiber (ADF) and neutral detergent fiber (NDF) indicate better forage quality.
[4] Milk Yield was calculated through Dairy One Forage Laboratories. Milk per ton was calculated from DM yields.
[5] Disease rates (GLS) and Rust (common and southern) were rated on a scale of 0 to 3, with 1 being at least one plant with expression of disease on any leaf and 3 being every plant in the plot expressing disease to the uppermost leaf.

Table 2. Green County, KY

Company	Hybrid	Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	TDN	ADF	NDF	Milk Yield[4] lb/T	lb/A	Disease Rates[5] GLS	Rust
Becks	6622AM	16.6	81	8.2	74	24	41	3,359	19,466	1	0.3
Becks	6886VR	23.3	83	8.7	77	20	35	3,367	27,436	1.7	1
Caverndale	CF1033VIP 310	18.8	76	9.2	69	29	48	2,933	19,282	1	0.3
Caverndale	CF853VIP 3110	16	74	8.3	67	30	49	2,975	16,626	1	1
Channel	210-98STXRIB	22.4	81	7.8	75	21	38	3,240	25,389	1	0.7
Channel	212-20VT2PRIB	19.3	81	9.3	73	26	41	3,332	22,561	1	0.3
CHECK	CHECK	21.8	81	9.1	74	24	42	3,409	26,027	1	1
Masters Choice	MCT6653	18.1	82	8.7	76	22	38	3,627	23,019	1	0.7
Masters Choice	MCT6733	22	84	8.5	77	19	34	3,432	26,432	1	1
Pioneer	P1637AM	**24.8**	80	8	74	26	43	3,343	29,022	1	0.7
Pioneer	P2089AML	20.1	73	8	65	29	47	2,884	20,333	1	0.7
Stewart Seed	17DP387	23.5	84	8.5	78	21	38	3,591	**29,593**	1.3	0.7
Stewart Seed	8E623RIB	20.6	80	8.3	73	24	40	3,175	22,913	1	0.7
Syngenta	NK1066	22.2	82	8.4	74	23	39	3,423	26,604	1	1.3
Syngenta	NK1808	20.2	75	7.5	67	28	47	3,021	21,343	1.3	0.7
Terral	25BHR89	24.4	81	8.9	75	24	41	3,445	29,445	1	0.7
Terral	28BHR18	22.7	83	8.9	76	23	38	3,521	27,992	1	1
	p value	0.0946							0.0186	0.5414	0.8027
	LSD (0.10)	3.5							4,048	ns	ns
	Average	21	80	8.5	73	24	41	3,299	24,323	1.1	0.7

[1] Percent dry matter (DM) represents the corn forage sample at harvest. Silage yields were adjusted to 35% DM; highest numerical yield is bold with gray box; bold yields are not significantly different from highest yield.
[2] In vitro True Digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid. Quality measurements are based on dry weight and calculated from composite samples at each site.
[3] Higher crude protein (CP) and total digestible nutrients (TDN) values indicate better forage quality. Lower acid detergent fiber (ADF) and neutral detergent fiber (NDF) indicate better forage quality.
[4] Milk Yield was calculated through Dairy One Forage Laboratories. Milk per ton was calculated from DM yields.
[5] Disease rates (GLS) and Rust (common and southern) were rated on a scale of 0 to 3, with 1 being at least one plant with expression of disease on any leaf and 3 being every plant in the plot expressing disease to the uppermost leaf.

Table 3. Mason County, KY

Company	Hybrid	Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	TDN	ADF	NDF	Milk Yield[4] lb/T	lb/A	Disease Rates[5] GLS	Rust
Becks	6622AM	20.9	77	7.5	70	24	43	2,536	18,542	2	1
Becks	6886VR	24.3	82	7.9	75	18	34	2,801	23,853	1.7	1.7
Caverndale	CF1033VIP 310	18	65	8.7	57	36	60	2,029	12,796	2.3	1.7
Caverndale	CF853VIP 3110	24	76	9.4	69	27	47	2,864	24,143	2	1.3
Channel	210-98STXRIB	26.9	82	7.6	76	18	34	2,837	26,675	2	2
Channel	212-20VT2PRIB	23.6	82	7.5	74	20	35	2,727	22,548	2	1.3
CHECK	CHECK	25.8	83	8	77	18	34	2,971	26,858	1.7	1.7
Masters Choice	MCT6653	21.2	83	7.8	76	19	35	2,842	21,109	2.3	1.7
Masters Choice	MCT6733	28.3	83	8	77	19	35	2,930	29,027	2	2.3
Pioneer	P1637AM	20.4	81	7.7	74	22	40	2,999	21,386	2	2.3
Pioneer	P2089AML	26.5	74	7.5	67	26	47	2,416	22,420	2	1.7
Stewart Seed	17DP387	24.8	78	7.6	71	23	43	2,650	23,007	2	1.7
Stewart Seed	8E623RIB	20.2	79	7.7	72	22	40	2,670	18,832	2	2
Syngenta	NK1066	28.3	79	7.1	71	24	41	2,790	27,588	2	**3**
Syngenta	NK1808	17.5	78	7.1	70	23	41	2,523	15,425	**3**	1.7
Terral	25BHR89	18.8	76	8.2	68	25	45	2,701	17,763	2.3	1.7
Terral	28BHR18	**29.2**	79	9.5	71	24	42	3,065	**31,271**	1	1
	p value	0.0206							0.0046	<.0001	0.0403
	LSD (0.10)	3.1							2,854	0	0.6
	Average	23.4	79	7.9	71	23	41	2,727	22,544	2	1.7

[1] Percent dry matter (DM) represents the corn forage sample at harvest. Silage yields were adjusted to 35% DM; highest numerical yield is bold with gray box; bold yields are not significantly different from highest yield.
[2] In vitro True Digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid. Quality measurements are based on dry weight and calculated from composite samples at each site.
[3] Higher crude protein (CP) and total digestible nutrients (TDN) values indicate better forage quality. Lower acid detergent fiber (ADF) and neutral detergent fiber (NDF) indicate better forage quality.
[4] Milk Yield was calculated through Dairy One Forage Laboratories. Milk per ton was calculated from DM yields.
[5] Disease rates (GLS) and Rust (common and southern) were rated on a scale of 0 to 3, with 1 being at least one plant with expression of disease on any leaf and 3 being every plant in the plot expressing disease to the uppermost leaf.

Table 4. Mercer County, KY

Company	Hybrid	Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	TDN	ADF	NDF	Milk Yield[4] lb/T	lb/A	Disease Rates[5] GLS	Rust
Becks	6622AM	20.7	67	6	60	37	61	2,218	16,061	-	-
Becks	6886VR	14.4	65	6.2	58	34	59	1,990	10,032	-	-
Caverndale	CF1033VIP 310	14.4	62	7	56	38	65	2,062	10,404	-	-
Caverndale	CF853VIP 3110	14.6	68	6.8	60	35	58	2,189	11,164	-	-
Channel	210-98STXRIB	17.1	65	6.9	58	37	61	2,097	12,568	-	-
Channel	212-20VT2PRIB	24.3	71	6.8	65	31	55	2,427	20,633	-	-
CHECK	CHECK	18.8	70	6.5	63	35	58	2,320	15,233	-	-
Masters Choice	MCT6653	15.6	64	6.9	58	37	64	2,119	11,593	-	-
Masters Choice	MCT6733	12.6	64	7.1	58	38	65	2,130	9,315	-	-
Pioneer	P1637AM	21.6	70	5.5	63	36	58	2,264	17,146	-	-
Pioneer	P2089AML	21.1	69	6.8	62	31	54	2,258	16,709	-	-
Stewart Seed	17DP387	20.3	70	6.9	64	32	56	2,335	16,587	-	-
Stewart Seed	8E623RIB	19.7	63	5.8	56	38	64	2,004	13,808	-	-
Syngenta	NK1066	16	65	5.7	57	37	63	2,066	11,570	-	-
Syngenta	NK1808	16.4	67	6.3	59	37	62	2,115	12,106	-	-
Terral	25BHR89	14.7	67	7.6	58	37	59	1,709	8,766	-	-
Terral	28BHR18	14.3	64	7.1	58	38	65	2,130	10,887	-	-
	p value	0.3133							0.2104	-	-
	LSD (0.10)	ns							ns	-	-
	Average	17.4	67	6.6	60	36	60	2,143	13,211	-	-

[1] Percent dry matter (DM) represents the corn forage sample at harvest. Silage yields were adjusted to 35% DM; highest numerical yield is bold with gray box; bold yields are not significantly different from highest yield.
[2] In vitro True Digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid. Quality measurements are based on dry weight and calculated from composite samples at each site.
[3] Higher crude protein (CP) and total digestible nutrients (TDN) values indicate better forage quality. Lower acid detergent fiber (ADF) and neutral detergent fiber (NDF) indicate better forage quality.
[4] Milk Yield was calculated through Dairy One Forage Laboratories. Milk per ton was calculated from DM yields.
[5] Disease rates (GLS) and Rust (common and southern) were not rated at this site.

Table 5. Agronomic Practices

Management	Green	Mason	Mercer
Planting	5/24/18	6/14/18	6/5/18
N, lb/A	216	191	200
P_2O_5, lb/A	10	35	0
K_2O, lb/A	124	72	120
Zn, lb/A			
Lime, tons/A			
Herbicide(s)	Glyphosate, Atrazine, Realm Q, followed by Status, Glyphosate	Glyphosate followed by Glyphosate	Glyphosate, Atrazine followed by Glyphosate
Fungicide(s)	Triplan	none applied	none applied
Soil Series	Mountview silt loam	Lowell-Sandview silt loam	Lowell silt-loam
Harvest	9/6/18	10/10/18	10/9/18
Cooperator	Stacy Sidebottom	Ronnie Lowe	Zack Ison

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