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University of Kentucky
College of Agriculture,
Food and Environment
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Kentucky Corn Silage Hybrid Performance Report, 2019

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Silage Corn Hybrid Performance Trials

Objective

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

Procedures

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

University of Kentucky personnel planted the hybrid seeds. Farmers applied the soil amendments and pest management. University of Kentucky 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. Corn 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 percent dry matter (65% moisture), two 10-foot 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 percent dry matter, milk yield per ton and per acre, 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 (LSD). The LSD is a method of separating hybrid performance from field variability. Hybrids with yields within one LSD of each other have a very good chance of performing similar to each other next year.

2019 Season Comments

Corn silage trials were planted in Green, Mason, and Mercer Counties. The 2019 growing season started wet, which delayed planting. The end of July, all of August, and part of September were unusually dry. The dry weather caused the researchers to abandon the Mason County location. The corn at that site was simply too damaged from drought to allow any fair comparisons among hybrids. The Mercer County location was more variable than preferred because of the dry weather, but it was deemed acceptable for hybrid comparisons. The Green County location provide the most uniform site this year.

We thank our farmer cooperators for hosting the plots and helping with planting, management, and harvest of the plots.
Table 1 provides comparisons of hybrid performance across all locations harvested. In 2019, there were 15 hybrids tested that averaged 22.3 tons per acre of silage. Statistical analysis revealed that 3.3 tons/acre was likely due to variability in the field. Nine hybrids yielded within 3.3 tons/acre of the highest yielding hybrid. Milk yield per ton averaged 128 pounds of milk per ton of silage. Three hybrids were among the highest yielding for milk yield per ton. Milk pounds per acre averaged 23,567 per acre among the hybrids with six hybrids among the highest-yielding.

Researchers

Research was conducted by Nick Roy, Adair County; Ricky Arnett, Green County; Linda McClanahan, Mercer County; Matthew Campbell, Mason County; Jonathan Oakes, Russell County; Colby Guffey, Clinton County; Adam Probst, Woodford County; Reiss Baxter, Casey County; Jay Hettsmansperger, Garrard County; Garrard Coffey, Rockcastle County; Philip Konopka, Lewis County; David Applemen, Bracken County; Samantha Woerner, Robertson County; April Wilhoit, Fleming County; and Tara McCarty, Mason County extension assistant; Keenan Bishop, Franklin County; Steve Musen, Jessamine County; Patton Slusher, Bourbon County; Statistical Analysis performed by Chad Lee, UK Grain and Forage Center of Excellence.

Table 1. All location average

Hybrid		Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	ADF	NDF	TDN	Milk Yield[4] lb/T	lb/A
Augusta	A1367	23.2	77	7.2	25	43	70	2,879	23,363
Augusta	A9967	22.1	80	6.9	24	41	73	2,827	22,006
Caverndale Farms	CF 889 VIPTERA 3111	23.7	79	8.0	24	42	73	3,221	26,713
Caverndale Farms	CF 859 VIPTERA 3111	**25.1**	79	**8.6**	26	44	71	3,053	26,793
Channel	218-44STXRIB	23.6	78	8.1	25	45	71	3,058	25,356
Channel	220-98STXRIB	20.3	74	7.2	**29**	47	67	2,916	20,804
Dyna Gro	D52VC63	22.9	80	7.3	23	40	73	3,039	24,436
Dyna Gro	D58VC65	23.1	76	7.5	26	45	68	2,893	23,422
Pioneer	P1637AM	24.5	**82**	8.1	24	41	**75**	**3,239**	**27,742**
Pioneer	P2089 AML	22.8	79	7.4	25	44	71	2,935	23,402
Seed Consultants	SCS 1125	18.3	81	7.3	23	38	73	3,215	20,552
Seed Consultants	SCS 1168	21.1	78	6.7	28	**48**	71	2,995	22,149
Stewarts	17DP387	21.5	76	7.9	25	45	69	2,859	21,478
Stewarts	8E753RIB	22.7	76	8.2	26	43	69	3,084	24,547
Check		19.4	76	8.2	26	44	70	3,068	20,743
p value		0.2716	<.0001	<0.0001	0.0005	0.0003	<.0001	<.0001	0.0722
LSD (0.10)		3.3	2	0.4	2	3	2	128	3,572
Average		22.3	78	7.6	25	43	71	3,019	23,567

[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.
[3] Quality measurements are based on dry weight and calculated from composite samples at each site. 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.

Table 2. Green County, 2019

Hybrid		Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	ADF	NDF	TDN	Milk Yield[4] lb/T	lb/A
Augusta	A1367	25.9	78.0	7.8	24.9	42.6	72.0	2,958	26,813
Augusta	A9967	24.8	81.0	7.9	21.2	39.1	74.0	3,179	27,564
Caverndale Farms	CF 889 VIPTERA 3111	23.0	77.0	7.2	26.2	45.4	71.0	3,099	24,908
Caverndale Farms	CF 859 VIPTERA 3111	26.7	77.0	8.5	26.2	45.1	69.0	3,114	29,119
Channel	218-44STXRIB	25.2	79.0	8.4	25.0	42.7	72.0	3,394	29,884
Channel	220-98STXRIB	25.2	78.0	8.2	23.6	41.5	71.0	3,003	26,439
Dyna Gro	D52VC63	25.8	85.0	7.9	16.7	31.4	80.0	3,287	29,684
Dyna Gro	D58VC65	23.5	75.0	8.6	26.9	45.1	69.0	3,257	26,797
Pioneer	P1637AM	**29.4**	80.0	8.1	23.8	40.6	74.0	3,129	**32,191**
Pioneer	P2089 AML	24.5	81.0	7.8	22.0	38.4	75.0	2,837	24,292
Seed Consultants	SCS 1125	20.3	80.0	8.4	24.0	41.7	74.0	3,243	23,010
Seed Consultants	SCS 1168	27.0	80.0	7.6	22.1	39.0	74.0	3,029	28,632
Stewarts	17DP387	20.8	79.0	8.8	22.9	40.4	73.0	3,063	22,272
Stewarts	8E753RIB	25.5	78.0	8.4	22.0	39.0	72.0	3,179	28,377
Check		21.4	75.0	8.8	26.9	46.5	67.0	2,958	22,125
p value		0.0027							0.0001
LSD (0.10)		2.2							2,497
Average		24.6	79	8.2	24	41	72	3,115	26,807

[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.
[3] Quality measurements are based on dry weight and calculated from composite samples at each site. 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.

Table 3. Mercer County, 2019

Hybrid		Tons/A 35% DM[1]	IVTD[2]	Forage Quality[3] CP	ADF	NDF	TDN	Milk Yield[4] lb/T	lb/A
Augusta	A1367	22.2	77.0	7.0	24.7	42.9	69.0	2,853	22,213
Augusta	A9967	21.2	79.0	6.6	24.8	42.2	72.0	2,710	20,153
Caverndale Farms	CF 889 VIPTERA 3111	23.9	80.0	8.3	23.1	40.8	73.0	3,262	**27,314**
Caverndale Farms	CF 859 VIPTERA 3111	**24.5**	79.0	8.6	25.4	44.2	71.0	3,033	26,018
Channel	218-44STXRIB	22.8	77.0	7.9	25.0	45.6	70.0	2,890	23,093
Channel	220-98STXRIB	18.7	72.0	6.9	30.6	49.3	66.0	2,887	18,926
Dyna Gro	D52VC63	21.9	78.0	7.1	24.8	43.0	71.0	2,956	22,686
Dyna Gro	D58VC65	23.0	76.0	7.1	25.6	44.7	68.0	2,772	22,297
Pioneer	P1637AM	22.9	82.0	8.1	23.5	41.0	75.0	3,275	26,259
Pioneer	P2089 AML	22.2	78.0	7.2	26.6	46.0	70.0	2,967	23,105
Seed Consultants	SCS 1125	17.6	81.0	6.9	22.5	37.4	73.0	3,205	19,733
Seed Consultants	SCS 1168	19.1	77.0	6.4	29.4	51.2	70.0	2,983	19,988
Stewarts	17DP387	21.8	75.0	7.4	26.6	47.2	67.0	2,757	21,081
Stewarts	8E753RIB	21.3	75.0	8.1	27.8	45.6	68.0	3,036	22,633
Check		18.3	77.0	7.9	25.0	42.3	71.0	3,123	20,052
p value		0.8375							0.711
LSD (0.10)		7.2							7474
Average		21.5	78	7.4	26	44	70	2,981	22,370

[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.
[3] Quality measurements are based on dry weight and calculated from composite samples at each site. 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.

Table 4. Agronomic practices

Management	Green County	Mercer County
Planting	5/14/2019	5/14/2019
N, lb/A	220	235
P_2O_5, lb/A	0	92
K_2O, lb/A	200	234
Zn, lb/A		
Lime, tons/A		
Herbicide(s)	Cornerstone + Leadoff followed by Cornerstone, + Status	Glyphosate and Atrazine
Fungicide(s)	Aproach Prima	
Soil Series	Mountview silt loam	
Harvest	8/29/2019	8/29/2019
Cooperator	Stacy Sidebottom	Jeff & Brady Core

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