



# Kentucky Corn Silage Hybrid Performance Report, 2020

Richard C. Kenimer, Philip W. Shine, and Chad Lee, Plant and Soil Sciences; and Nick Roy and Ricky Arnett, Extension Agents for Agriculture and Natural Resources

## 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.

## General 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 (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 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. Corn hybrids were arranged in a randomized complete block design with three replications at each farm. Hybrid seed was planted in four row plots with Wintersteiger Dynamic Disk precision planter that planted each plot at 36,000 seeds per acre. Fields were monitored for pests.

When most hybrids were near 35% dry matter (65% moisture), the two center rows of each plot was harvested with a John Deere 5400 modified for small plots. The entire harvested corn sample was weighed 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, which also calculated milk yield.

Hybrid performance reported here includes silage yield adjusted to 35% 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 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.

## 2020 Season Comments

Corn silage trials were planted in Caldwell, Fayette, and Green counties. The 2020 growing season started wet, delaying planting. During the middle part of the season, the Fayette County location experienced hot, dry conditions, which led to a lower overall yield as compared to the other locations.

We thank our farmer cooperator Stacy Sidebottom for allowing us access to his farm to conduct this trial. Also, special thanks to Dr. Kiersten Wise, Plant Pathology, for taking disease ratings.

Table 1. All location average, 2020.

Hybrid	Tons/A		Forage Quality <sup>c</sup>				Milk Yield <sup>d</sup>	
	35% DM <sup>a</sup>	IVTD <sup>b</sup>	CP	ADF	aNDF	TDN	lb/T	lb/A
Dyna-Gro D55VC80	18.5	84	8	24	44	74	3267	21193
Caverndale CF 889 VIP 3111	18.2	85	8	24	43	75	3395	21733
Stewart 14DD339	17.7	84	8	22	41	75	3227	20152
Stewart 17DP387	17.5	85	8	21	39	75	3308	20550
Channel 213-49VT2PRIB	17.3	86	8	20	37	76	3302	20038
Channel 219-77VT2PRIB	17.2	86	8	21	39	76	3464	21048
NuTech 75G1AM	17.2	85	8	22	40	75	3344	20243
Dyna-Gro D57VC17	17.1	85	8	23	42	75	3223	19309
Armor A1575	16.7	85	8	22	42	75	3323	19459
NuTech 78A1AM	16.4	85	9	22	40	75	3208	18398
Pioneer P1637YHR	16.3	83	8	25	45	74	3138	18077
Armor A1717	16.3	84	8	23	42	74	3189	18145
Croplan CP5700S	16.3	84	9	25	44	74	3382	19243
Croplan CP5900S	16.0	84	9	23	41	74	3382	18931
Pioneer P2089VYHR	15.9	85	8	22	42	75	3352	18741
Caverndale CF 859 VIP 3111	15.4	85	8	22	40	75	3377	18264
Check	13.8	80	8	28	50	69	3039	14261
CV	14.2							
LSD	0.8							

Shaded cells are not significantly different from top yield (0.10)

<sup>a</sup> 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; yields with a gray box are not significantly different from highest yield.

<sup>b</sup> In vitro true digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid.

<sup>c</sup> 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.

<sup>d</sup> Milk yield was calculated through Dairy One Forage Laboratories. Milk per ton (milk yield, lb/T) was calculated from DM yields and milk yield per acre was the product of milk yield per ton by silage yield per acre.

**Table 2. Caldwell County, 2020.**

Hybrid	Tons/A		Forage Quality <sup>c</sup>				Milk Yield <sup>d</sup>	
	35% DM <sup>a</sup>	IVTD <sup>b</sup>	CP	ADF	aNDF	TDN	lb/T	lb/A
Dyna-Gro D57VC17	16.9	83	5	24	45	72	2781	16491
Armor A1575	16.1	85	6	21	40	75	3115	17537
Dyna-Gro D55VC80	16.1	82	6	24	44	72	2967	16704
Armor A1717	16.0	83	5	22	41	72	2887	16138
Channel 213-49VT2PRIB	15.5	85	6	20	39	74	2996	16208
Stewart 14DD339	15.3	81	5	25	45	72	2935	15673
Caverndale CF 889 VIP 3111	14.9	82	5	23	43	72	3023	15750
Stewart 17DP387	14.9	82	5	25	45	72	2920	15213
Channel 219-77VT2PRIB	14.6	83	6	22	42	72	3041	15540
NuTech 78A1AM	13.8	85	6	20	39	76	3173	15357
Pioneer P1637YHR	13.8	84	6	24	42	75	2935	14205
Croplan CP5900S	13.5	83	7	23	41	72	3159	14974
Check	13.5	78	6	29	49	67	2965	14024
Caverndale CF 859 VIP 3111	13.4	82	6	25	44	71	3022	14143
Pioneer P2089YHR	13.3	85	6	22	42	75	3143	14615
Croplan CP5700S	12.9	83	6	24	44	72	3229	14627
NuTech 75G1AM	12.7	83	5	25	45	72	3150	13986
CV	10.0							
LSD	0.9							

Shaded cells are not significantly different from top yield (0.10)

<sup>a</sup> 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; yields with a gray box are not significantly different from highest yield.

<sup>b</sup> In vitro true digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid.

<sup>c</sup> 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.

<sup>d</sup> Milk yield was calculated through Dairy One Forage Laboratories. Milk per ton (milk yield, lb/T) was calculated from DM yields and milk yield per acre was the product of milk yield per ton by silage yield per acre.

**Table 3. Fayette County, 2020.**

Hybrid	Tons/A		Forage Quality <sup>c</sup>				Milk Yield <sup>d</sup>	
	35% DM <sup>a</sup>	IVTD <sup>b</sup>	CP	ADF	aNDF	TDN	lb/T	lb/A
NuTech 75G1AM	19.2	86	9	20	37	76	3260	21940
Channel 219-77VT2PRIB	17.3	88	10	21	38	78	3676	22203
Caverndale CF 889 VIP 3111	17.1	89	10	23	41	79	3714	22210
Dyna-Gro D55VC80	16.8	89	10	23	42	79	3582	21062
Armor A1575	16.5	87	10	22	41	77	3441	19855
Dyna-Gro D57VC17	16.5	85	9	23	42	76	3284	18916
Stewart 14DD339	16.4	87	9	20	41	78	3286	18895
Channel 213-49VT2PRIB	16.4	88	9	19	34	79	3411	19545
Stewart 17DP387	16.0	87	9	19	36	78	3415	19090
Croplan CP5700S	15.9	88	10	23	42	78	3650	20258
Croplan CP5900S	15.5	89	11	21	39	80	3737	20329
NuTech 78A1AM	15.5	87	10	19	36	77	3203	17360
Armor A1717	14.7	86	9	23	43	77	3485	17913
Pioneer P2089YHR	13.9	87	10	22	45	76	3460	16816
Caverndale CF 859 VIP 3111	13.8	89	10	20	35	80	3665	17739
Pioneer P1637YHR	13.7	83	11	28	49	73	3149	15084
Check	10.5	88	11	22	44	78	3572	13074
CV	11.6							
LSD	1.1							

Shaded cells are not significantly different from top yield (0.10)

<sup>a</sup> 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; yields with a gray box are not significantly different from highest yield.

<sup>b</sup> In vitro true digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid.

<sup>c</sup> 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.

<sup>d</sup> Milk yield was calculated through Dairy One Forage Laboratories. Milk per ton (milk yield, lb/T) was calculated from DM yields and milk yield per acre was the product of milk yield per ton by silage yield per acre.

**Table 4. Green County, 2020.**

Hybrid	Tons/A		Forage Quality <sup>c</sup>				Milk Yield <sup>d</sup>	
	35% DM <sup>a</sup>	IVTD <sup>b</sup>	CP	ADF	aNDF	TDN	lb/T	lb/A
Dyna-Gro D55VC80	22.7	82	9	25	46	72	3251	25813
Caverndale CF 889 VIP 3111	22.6	84	9	25	44	75	3448	27239
Stewart 17DP387	21.8	86	9	20	36	76	3589	27348
Pioneer P1637YHR	21.4	82	8	24	43	73	3330	24942
Stewart 14DD339	21.4	84	9	22	38	75	3461	25888
Pioneer P2089VYHR	20.5	84	9	23	41	74	3453	24793
Croplan CP5700S	20.0	82	11	27	47	73	3268	22843
Channel 213-49VT2PRIB	19.9	86	9	21	38	76	3500	24360
NuTech 78A1AM	19.8	82	10	26	45	72	3248	22476
Channel 219-77VT2PRIB	19.7	86	9	20	37	77	3676	25401
NuTech 75G1AM	19.6	86	9	21	39	77	3621	24804
Caverndale CF 859 VIP 3111	19.0	84	9	21	40	74	3445	22909
Croplan CP5900S	18.9	81	10	25	43	71	3251	21489
Armor A1717	18.2	82	9	25	43	72	3195	20384
Dyna-Gro D57VC17	17.9	86	10	21	39	77	3603	22519
Armor A1575	17.6	83	9	24	44	74	3412	20984
Check	17.4	74	9	34	57	63	2580	15686
CV	17.1							
LSD	2.0							

Shaded cells are not significantly different from top yield (0.10)

<sup>a</sup> 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; yields with a gray box are not significantly different from highest yield.

<sup>b</sup> In vitro true digestibility (IVTD) estimates digestibility from anaerobic fermentation by incubating samples in rumen fluid.

<sup>c</sup> 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.

<sup>d</sup> Milk yield was calculated through Dairy One Forage Laboratories. Milk per ton (milk yield, lb/T) was calculated from DM yields and milk yield per acre was the product of milk yield per ton by silage yield per acre.

**Table 5. Agronomic practices, 2020.**

Management	Caldwell County	Fayette County	Green County
Planting	4/21/2020	5/12/2020	6/1/2020
N/P/K	Crider Silt Loam	Lanton Silt Loam	Mountainview Silt Loam
Soil	165/46/60	165/46/60	220/0/200
Harvest	8/25/2020	9/8/2020	9/16/2020

**Table 6. Disease ratings, 2020.**

Name	Mean GLS (%)	Mean NCLB (%)
Armor A1575	3.00	15.00
Armor A1717	10.67	18.33
Caverndale CF 859 VIP 3111	10.00	18.33
Caverndale CF 889 VIP 3111	3.67	15.00
Channel 213-49VT2PRIB	3.67	36.67
Channel 219-77VT2PRIB	2.33	46.67
Croplan CP5700S	5.67	33.33
Croplan CP5900S	7.33	25.00
Dyna-Gro D55VC80	1.67	3.33
Dyna-Gro D57VC17	5.67	2.67
NuTech 75G1AM	4.33	36.67
NuTech 78A1AM	2.33	50.00
Pioneer P1637YHR	5.00	43.33
Pioneer P2089VYHR	9.33	30.00
Check	8.33	30.00
Stewart 14DD339	3.67	8.33
Stewart 17DP387	3.00	20.00

GLS=Gray leaf spot

NCLB=Northern corn leaf blight



Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.