Corn Product Silage Quality and Tonnage

Trial Objective

- Corn silage is an important feedstock for cattle producers across the Great Plains.
- Desirable corn products should produce high tonnage with favorable silage quality characteristics.
- In this study, the objective was to provide insights to farmers on which of the 22 corn products evaluated have high tonnage and good silage quality characteristics.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Planting Rate (seeds/acre)
Gothenburg, NE	Hord silt loam	Grain sorghum	Strip	5/23/18	10/1/18	250	36K

- The study was set up as a randomized complete block with three replications.
- Twenty-two corn products were evaluated.
- Corn was sprinkler irrigated and weeds were controlled as needed. No fungicide or insecticide was applied.
- Silage quality was sampled for each corn product at ½ milk line. Sampling dates varied by relative maturity, but all sampling occurred in the last two weeks of September.
- Corn products were hand-harvested about four inches above the soil surface to provide a representative sample and were then chopped with a silage chopper.
- A subsample of the freshly-chopped material was collected and sent to Dairyland Laboratories Inc. for silage quality analysis.
- Total biomass was collected, weighed, and tonnage was determined for each corn product.

Understanding the Results

- Corn products did vary in silage quality and tonnage as there were significant differences in all parameters tested as reported in Table 1.

Figure 1. Short- and long-season corn products at harvest.

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Key Learnings

- Producers should work with their local seed sales team to identify how their branded corn products performed in this study.

Table 1. Silage quality analysis metrics, performed by Dairyland Laboratories Inc.

Product	Wet t/a 65%	Dry t/a	% DM	% Starch	% NDF	NDFD 24	NDFD 48	uNDF 24	uNDF 240	IVSD 7hr	% ADF	% CP	TFA	Sugar	%TDN	Lignin % DM	NEL	NEG	2006 milk/ton
105RM	22.6	7.8	33.8	29.9	43.3	47.7	57.1	21.9	14.3	68.5	26.3	8	1.9	5.7	69	4	0.68	0.45	3136.3
108RM	28.8	9.9	33.9	32.8	40.4	47.4	57.3	20.6	13.1	68.2	24.2	7.8	2.1	6.3	70.4	3.5	0.70	0.47	3249
109RM	29.3	10.1	33.8	35.3	37.2	50.6	60.8	17.7	10.9	67.5	22	8.1	2.4	6.3	73.9	3	0.73	0.51	3498
110RM-B	29.7	10	32.4	25.9	44.9	50.3	59.3	21.7	13.6	69.4	26.9	8.4	1.6	6	68.4	3.8	0.67	0.44	3067
116RM-A	30.5	10.9	36.4	32.1	41.8	45.6	55.3	21.9	14	68.3	25.4	8.2	1.8	5.3	68.4	3.9	0.68	0.45	3101.7
120RM-A	29.9	11.1	31.5	25.9	43	45.5	55.4	22.6	14.2	67.9	26.7	8.9	1.6	6.8	66.4	3.9	0.65	0.42	2946
120RM-B	33.3	10	27.9	18.6	52.9	47.1	55.2	27.2	17.8	73	32.2	7.6	1.2	6.9	62.7	4.8	0.61	0.37	2671.7
97RM	24.3	8.4	34.3	33.3	40.3	44.9	55	21.3	14	67.9	24.1	8.2	2	6.2	70	3.8	0.70	0.47	3226
98RM	27.3	9.9	37.7	34.7	38.9	47.6	57.7	19.6	12.8	66.9	23.2	8.2	2.1	5.9	70.9	3.5	0.70	0.49	3280.7
110RM-B	30.2	9.9	30.7	26.9	44.2	49.2	58.4	21.6	14	69.1	26.6	8.5	1.8	6.4	68.6	3.9	0.67	0.45	3093.3
120RM-C	28.8	10.1	28.7	25	46.5	43.9	53.1	25.2	16.4	70.9	28.9	8	1.6	6.6	64.7	4.4	0.64	0.39	2840.3
117RM	30.7	11.1	38.1	36.6	36.6	45.2	55.9	19.4	12.5	66.7	21.4	8.3	2.3	6.5	71.4	3.4	0.71	0.50	3338.7
119RM	33.1	11.4	33.4	31.9	40.2	47	56.9	20.6	13	68.6	24.5	8.2	1.9	5.7	69.8	3.6	0.69	0.46	3205
114RM	31.4	11	35.2	28.2	40.3	50.6	60.1	19.1	12.3	66.8	23.7	9.8	1.8	6	70	3.6	0.68	0.47	3192
115RM	30.3	10.6	36.7	31.5	42	47.1	56.7	21.6	13.6	67.5	25.3	7.8	2	5.7	69.4	3.8	0.69	0.46	3177.3
116RM-B	30.3	10.7	36.1	35.3	37.9	46.2	56.5	19.7	12.8	67.3	22.6	8.1	2.3	6.2	71.4	3.4	0.71	0.48	3333.3
111RM	30.1	10.5	38.8	36.8	35.4	47.7	58.6	17.8	11.4	65.8	20.9	8.8	2.3	5.4	72	3.3	0.71	0.51	3360.7
114RM	33.9	11.8	35.4	32.9	39.5	46.8	56.9	20.2	12.8	68.4	23.5	8.4	1.9	5.7	70.2	3.6	0.69	0.47	3230.7
114RM COMP	33.2	10.9	33	32.1	36.7	57.4	67.8	15	8.8	66.6	21.3	8.7	2	6.9	75.3	2.4	0.73	0.53	3554.7
109RM COMP	23.9	8.2	34.4	38	35	52.3	63.3	15.7	9.4	65.9	20.2	8.3	2.2	6.2	75.4	2.6	0.74	0.54	3592.7
118RM COMP	32.4	11.6	38.1	39	34.5	46.9	58	17.7	10.9	66.9	20	8.6	2.4	5.8	73.2	3.1	0.73	0.52	3463.3
111RM COMP	29.0	10.4	36.9	39.8	34.7	49.6	60.3	16.9	10.5	68.3	20.1	8.3	2.3	5.5	74.5	3.1	0.74	0.53	3554
LSD P=.10	4	1.38	3.18	7.98	6.71	4.6	3.61	2.81	1.88	1.92	4.47	0.84	0.48	0.93	3.23	0.48	0.04	0.05	258.04

Wet t/a 65% – wet tonnage; Dry t/a – dry tonnage; DM – Dry Mater; NDF – Neutral Detergent Fiber; NDFD - incremented measurement of NDF; uNDF - undigested NDF residue; IVSD 7hr - in vitro starch digestibility after 7 hrs; ADF – Acid Detergent Fiber; CP – Crude Protein; TFA – Total Fat; TDN – Total Digestible Nutrients; NEL – Net Energy for Lactation; NEG – Net Energy for Gain

Legal Statements