



Northern New York Agricultural Development Program FACT SHEET

The Importance of Hybrid Selection

The results of Northern New York Agricultural Development Program-funded corn silage hybrid trials help farmers evaluate which hybrids will return the highest quality and best yield for their farms and their herds in the coming year.

The results of the corn silage trials in NNY at Madrid and Sackets Harbor and trials at Aurora and Groveland Station are incorporated in the recommended corn silage tables in the annual Cornell Guide to Field Crop Management.

Only hybrids with above-average relative calculated milk yields in their hybrid RM group will be listed.

Evaluation of Corn Silage Hybrids for NNY for 2009

Principal Investigators: William J. Cox, Jerry H. Cherney, Department of Crop and Soil Sciences, Cornell University; Michael H. Davis, Farm Manager, Cornell University E.V. Baker Agricultural Research Farm at Willsboro

Introduction:

Why Run Field Trials for Corn Silage Hybrids

Hybrid selection is one of the most important management practices that affects corn silage yield and quality. Having actual silage yield and quality data obtained from testing hybrids in the region where they will be grown helps farmers of that region make vital decisions.

With funding from the Northern New York Agricultural Development Program, researchers from Cornell University annually run annual on-farm field trials in Northern New York to analyze corn silage hybrids. The results help farmers in the region evaluate which hybrids will return the highest quality and best yield for their farms and their herds. Combined with good management, proper harvesting, storage and feeding, planting a well-chosen corn silage hybrid will result in a crop that helps produce desired milk and beef yields.

The results from this study reflect well the yield and quality of corn silage that was planted in early May of 2008 in Northern New York. The results of these trials provide an excellent opportunity to compare hybrids for yield and quality before selecting hybrids for the coming 2009 growing season.

Methods:

In 2008, Cornell University evaluated 80-100 day corn silage hybrids at two locations in Northern New York. We planted all hybrids with a 2-row plot planter at 36,000 plants/acre to achieve harvest populations of 32,000-34,000 plants/acre. The Sackets Harbor site (Robbins Farms) was planted on May 6th; the Madrid site (Greenwood Dairy) was planted May 7th.

Researchers in Idaho found that high quality corn silage produced \$315 more beef per acre than low quality silage.

The 2008 trial goal was to harvest all hybrids in the 60-70% moisture range and only a very few of the hybrids were outside that range at each site.

Across Northern New York (Essex, Clinton, Franklin, St. Lawrence, Lewis & Jefferson counties), corn for silage is grown on 103,186 acres. (2002 Census)

Methods *(continued)*

All hybrids were planted in a randomized complete block design with four replications. Each individual plot consisted of two 22-foot rows spaced 30 inches apart.

Each individual plot received approximately 250 lbs/acre of 10-20-20 at planting. The sites were well-manured dairy sites, so they received no sidedress N. Pre-emergence herbicides and hand-weeding were used to control weeds.

Both rows, trimmed back to an 18-foot length, of each hybrid were harvested for silage yield with a retrofitted 3-row New Holland Chopper with a platform and a weigh-basket, mounted on load cells. The goal was to harvest all hybrids in the 60-70 percent moisture range and only a very few of the hybrids were outside that range at each site.

All hybrid RM groups were harvested at Sackets Harbor on September 11, 2008, and at Madrid on September 19, 2008.

An approximate 10,000 g well-mixed sample was originally collected from the chopper after harvest of each plot. The 10,000 g sample was then ground further in the field with a chipper-shredder. An approximate 700 g sub-sample was then weighed with a gram-scale in the field and refrigerated in a generator-powered freezer (samples were not frozen).

At the end of each day, the samples were brought back to a Cornell Research Farm for drying. The samples were dried at 140^oF in a forced air drier to constant moisture and then weighed to determine moisture content of each sample.

Samples were processed and analyzed by Cumberland Valley Analytical Services, Inc. Samples were analyzed by wet chemistry for neutral detergent fiber (NFNDF), according to procedures by Van Soest et al. (1991). Samples were incubated for 30 hours at 39^oF in a buffered rumen fluid, according to procedures by Van Soest and Robertson (1980) using a flask system and Van Soest buffer. Following



*A Cornell researcher collects corn silage hybrid samples to test for moisture and quality.
Photo: Cornell University*

fermentation, residues were analyzed for NDF by wet chemistry to determine 30-hour NDF digestibility (NDFD). The NDF digestibility was calculated as $([1 - \text{NDF residue} / \text{initial NDF}] \times 100)$. Crude protein (CP), starch, ether extract, and ash were determined using NIRS.

Milk per ton and milk per acre were then calculated using the MILK2006 spreadsheet program from the University of Wisconsin. MILK2006 also calculates milk yield/acre of each hybrid by combining silage yield and milk/ton values.

Data were analyzed using the PROC GLM procedure of SAS. The LSD values for separating hybrid means were generated at the P=0.10 level. Hybrids are considered above-average for calculated milk yield, milk/ton, or silage yield when the hybrid's value is 101 percent or more of the mean value within their RM group across sites (and much-above average with values more than 105 percent).

2008 Season Results

The 2008 growing season in Northern NY was mostly similar to that in central/western NY (Table 1). Conditions were moderately dry at both sites from late April until mid-June and then turned wet at Sackets Harbor. September was moderately dry at both sites, which facilitated harvest.

Frost did not occur until early October at Sackets Harbor, but a light frost occurred the morning of September 19, the day of the harvest, at Madrid.

As in central/western NY, silage yields were high because of stress-free conditions and the 80-89 day RM group averaged 24.0 at Sackets Harbor and 25.0 tons/acre at Madrid, the 90-95 RM group averaged 26.1 and 26.0, and the 96-100 RM group averaged 27.2 and 26.4 tons/acre, respectively.

Hybrids are considered above-average for calculated milk yield, milk/ton, or silage yield when the hybrid's value is 101% or more of the mean value within their RM group across sites (and much-above average with values more than 105%).

Table 1. Weather Data for NYS Corn Silage Trials in NNY, 2008.

	Precipitation					
	May	June	July	August	Sept	Season
Madrid *	2.62	5.66	4.28	2.67	2.32	17.55
Sackets Harbor **	2.74	3.00	4.39	4.68	2.96	17.77
	Growing Degree Days					
Madrid *	229	513	599	490	373	2204
Sackets Harbor **	222	495	571	497	366	2151

* Data from weather station at Canton, NY

** Data from weather station at Watertown, NY

Visit the Northern New York Agricultural Development Program website at www.nnyagdev.org for information on:

- **2004-2007 Corn Silage & Corn Grain Hybrid Trials in NNY**
- **How Soil Type and Drainage Affect Corn Nitrogen Response**
- **How Corn Growers May Reduce or Eliminate Use of Phosphorus**
- **Aminosugar Nitrogen Soil Test for Economic and Environmentally-Sound N Management of Corn in NNY**
- **BMR Sorghum Sudangrass vs. Late Planted Corn**
- **Brown Midrib Sorghum Sudangrass: An Economic and Environmentally-Sound Alternative to Corn in NNY?**
- **Economic and Environmental Impacts of Corn Silage Maturity**
- **Corn N Calculator**

2008 Season Results *(continued)*

80-89 Day Group

Three hybrids at Sackets Harbor and four hybrids at Madrid had above-average calculated milk yields in the 80-89 day RM group (Tables 3 and 4).

The hybrids, TA290-19 and TA240-00 from T.A. Seeds, and HL SR35 from Hyland had above-average milk yields at both sites. The hybrid, DKC38-89, a DK brand, also had above-average milk yields at Madrid.

The hybrid F2F29/F27311 from Mycogen had a much above-average milk/ton value at both sites. Other hybrids with above-average milk/ton values include DKC38-39 and TA240-00.

When averaged across sites, TA290-19, HL R35, and TA240-00 had much above-average silage yields.

90-95 Day Group

Twelve hybrids at Sackets Harbor and 11 hybrids at Madrid had above-average milk yields in the 90-95 day RM group (Tables 3 and 4).

The hybrids, HL B294 from Hyland, 946 LRR and 1900F/RR/HX from LICA, TMF2L416 and TMF2N422 from Mycogen, 99 S7 from LICA, and HL S047 from Hyland had above-average milk yields at both sites.

The hybrid, DKC45-79 (a DEKALB brand), UFO 105B6 from LICA, 4282VT3 from GROWMARK FS, 88H48GT from Garst, and TNT-92RR from Hytest Seeds had above-average milk yields at Sackets Harbor.

The hybrids 38H08 and 38N47 from Pioneer, 467BVR from Doebler's, and HL SR42 from Hyland had above-average milk yields at Madrid.

The hybrid UFO 105B6 had a much-above milk/ton value in the 90-95 RM group. Other hybrids with above-average milk/ton values include HL SR42, TMF2L416, TMF2N422, and HL B294.

When averaged across sites, HLB294, 1900F/RR/HX, 946 LRR, 99 S7, TMF2L416, and TMF2N422 had much above-average silage yields in the 90-95 day RM group.

96-100 Day Group

Three hybrids at Sackets Harbor and three hybrids at Madrid had above-average milk yields in the 96-100 day RM group (Tables 3 and 4). The hybrid 36Y26 from Pioneer had above-average calculated milk yields. The hybrids DKC50-44, a DEKALB brand, and TA489-00F from T.A. Seeds had above-average milk yields at Sackets Harbor. The hybrids TA476-11 from T.A. Seeds and NG6520 from Fielder's Choice had above-average milk yields at Madrid.

When averaged across sites, 38H72 from Pioneer had an above-average milk/ton value, as did 36Y26 and DKC50-44.

When average across sites, TA476-11, DKC50-44, and TA489-00F had above-average silage yields in the 96-100 day RM group.

Comparative Results

The data in Table 2, prepared by Cornell Cooperative Extension of St. Lawrence County Field Crops Educator Stephen Canner using data from Cornell University Crop and Soil Sciences Professor William J. Cox, includes only hybrids that performed above-average.

Table 2. Recommended Corn Silage Hybrids Based on NNY Trials funded by Northern New York Agricultural Development Program (see 2008 trial results on pages 6-7 of this fact sheet).

Recommended 77-85-day corn silage hybrids based on NNY trials through 2007.

Brand/Source & Hybrid	Silage Yield	Comparative		
		Milk/Ton	Milk Yield	Years in Trial
T.A. Seeds TA240-11	111	101	112	1
Doebler's 377BWR	108	102	110	2
Hyland HL S011	107	99	105	5

Recommended 86-90-day corn silage hybrids based on NNY trials through 2007.

Brand/Source & Hybrid	Silage Yield	Comparative		
		Milk/Ton	Milk Yield	Years in Trial
Pioneer 38N87	108	101	109	1
Hyland HL SR35	109	99	107	1
Hyland HL S034	108	100	107	6
Garst 8866	104	98	102	1
NK N29-A2	98	103	102	3

Recommended 91-95-day corn silage hybrids based on NNY trials through 2007.

Brand/Source & Hybrid	Silage Yield	Comparative		
		Milk/Ton	Milk Yield	Years in Trial
Mycogen TMF2N422	120	104	119	1
T.A. Seeds 310-02F	118	99	116	1
Pioneer 38K47	115	100	115	1
LICA 946LRR	109	101	110	2
Doebler's 468RB	112	98	110	1
Growmark FS EX2604	106	101	108	1
Dyna-Gro 53K69	106	100	106	1
Mycogen TMF2L416	106	100	106	1
DEKALB DKC45-82	102	99	101	1

Recommended 95-100-day corn silage hybrids based on NNY trials through 2007.

Brand/Source & Hybrid	Silage Yield	Comparative		
		Milk/Ton	Milk Yield	Years in Trial
DEKALB DKC50-48	108	102	109	1
LICA 964L	108	100	106	2
LICA 99 S27	108	..99	106	1
LICA 99 BS7	104	102	106	1

**Table 3. 2008 corn silage hybrid trial results for Northern New York, Jefferson County
(Robbins Farms, Sackets Harbor).**

Brand	Hybrid	Silage Yield tons_65	Moisture %DM	30-hr			Milk 2006		
				NDF %DM	dNDF %	CP %DM	Starch %DM	Milk/Ton lbs/ton	Milk Yield lbs/acre
80-89 day Relative Maturity									
Hyland	HL SR35	27.4	66.0	43.2	55.3	7.3	31.7	3186	30553
TA Seeds	TA240-00	26.1	60.8	40.2	55.4	7.0	36.2	3292	30086
TA Seeds	TA290-19	25.9	60.6	39.6	53.8	7.1	37.0	3293	29939
Dekalb	DKC38-89	25.1	65.0	38.9	56.9	7.2	36.4	3344	29404
Hyland	HL SR22	25.4	63.3	41.5	55.7	8.0	31.8	3248	28881
Mycogen	F2F297/F27311	22.2	64.2	39.0	68.4	7.3	35.8	3608	28054
Dairyland Seed	HiD.F.-3085-6	24.4	65.2	39.8	54.6	7.5	34.4	3274	27976
Fielder's Choice	NG6321	23.8	66.2	40.1	53.1	7.8	31.7	3144	26174
90-95 day Relative Maturity									
Hyland	HL B294	31.5	69.1	41.6	59.2	7.1	33.2	3312	36551
LICA	99 S7	28.6	67.6	42.4	56.3	7.2	31.7	3252	32524
Mycogen	TMF2L416	27.8	66.3	40.8	58.6	7.6	33.2	3336	32479
Mycogen	TMF2N422	28.2	65.2	42.8	56.4	7.1	32.7	3241	31940
Pioneer	38H08	27.8	64.1	40.5	55.2	6.6	35.8	3254	31679
LICA	1900F/RR/HX	28.8	70.0	42.9	54.4	6.8	31.8	3143	31656
LICA	946 LRR	27.3	65.9	43.4	57.3	6.9	32.5	3245	31011
Doebler's	467BVR	27.5	68.9	43.5	54.9	6.9	31.9	3182	30687
Hyland	HL SR42	25.5	67.0	40.6	61.0	7.5	33.9	3399	30313
Pioneer	38N87	26.0	66.1	39.3	55.0	7.5	35.2	3305	30099
Hyland	HL S047	26.2	65.6	42.1	57.1	7.4	32.8	3272	29963
Hyttest Seeds	TNT-92RR	26.0	67.5	43.1	57.9	7.3	31.7	3253	29616
Dyna-Gro Seed	53K69	25.5	68.1	40.4	57.1	6.8	36.1	3309	29557
Dekalb	DKC41-60	25.6	67.5	40.4	55.9	7.1	35.2	3274	29361
Garst	88H48GT	26.0	66.5	41.4	52.7	6.7	34.5	3188	29054
Growmark FS	4282VT3	24.9	69.1	41.4	57.2	6.7	34.7	3282	28578
NK Seeds	N27B-CB/LL/RW	24.6	65.1	39.6	55.4	7.5	35.4	3316	28504
Dekalb	DKC45-79	25.0	67.9	41.7	56.1	7.1	33.3	3227	28242
Doebler's	377BVR	24.0	66.7	40.2	56.9	7.3	35.3	3305	27732
TA Seeds	TA370-00	24.2	65.6	39.7	54.7	7.2	36.1	3276	27727
Hyttest Seeds	HT7220 BT/RR	24.6	67.5	41.1	52.4	7.4	33.9	3199	27566
LICA	UFO 105B6	22.4	72.1	42.2	69.0	7.4	30.4	3447	27036
TA Seeds	TA310-00F	23.8	65.0	43.2	56.8	7.2	32.2	3226	26876
LICA	9707 BT/LL	23.5	66.4	41.0	55.5	7.3	33.9	3255	26830
96-100 day Relative Maturity									
TA Seeds	TA476-11	28.1	66.8	41.5	52.8	7.1	34.1	3200	31487
Fielder's Choice	NG6520	27.1	68.5	40.6	54.7	7.2	34.7	3254	30816
Pioneer	36Y26	26.7	69.0	41.1	55.0	7.6	33.2	3234	30173
TA Seeds	TA489-00F	26.2	67.0	42.7	57.9	7.2	32.5	3276	29985
Pioneer	38H72	25.1	67.2	39.1	55.9	7.3	35.4	3320	29230
Dekalb	DKC50-44	25.2	70.0	42.0	55.0	7.0	33.4	3208	28306
	LSD 0.10	2.25	1.00	1.37	1.36	0.23	1.59	68	2820
	Overall Mean	25.9	66.6	41.2	56.5	7.2	33.8	3273	29648

Table 4. 2008 corn silage hybrid trial results for Northern New York, St. Lawrence County (Greenwood Farms, Madrid).

Brand	Hybrid	Silage Yield tons_65	Moisture %DM	30-hr			Milk 2006		
				NDF %DM	dNDF %	CP %DM	Starch %DM	Milk/Ton lbs/ton	Milk Yield lbs/acre
80-89 day Relative Maturity									
TA Seeds	TA290-19	28.6	62.7	37.9	53.9	7.8	36.8	3328	33286
TA Seeds	TA240-00	27.6	62.1	37.9	52.9	7.7	37.0	3308	31970
Hyland	HL SR35	27.0	65.1	40.2	55.4	7.9	33.5	3260	30749
Dekalb	DKC38-89	24.3	64.5	38.3	53.1	7.7	35.7	3260	27696
Mycogen	F2F297/F27311	21.6	64.5	37.2	67.4	8.0	35.5	3584	27083
Hyland	HL SR22	24.6	62.7	41.5	53.0	8.6	29.7	3127	26921
Dairyland Seed	HiD.F.-3085-6	23.6	63.3	38.9	52.7	8.1	34.1	3217	26544
Fielder's Choice	NG6321	22.0	63.8	41.1	49.4	8.6	28.8	2942	22675
90-95 day Relative Maturity									
Hyland	HL B294	31.0	67.9	40.0	55.3	7.4	34.7	3261	35505
LICA	946LRR	30.7	66.0	40.3	56.7	7.6	33.7	3286	35304
LICA	1900F/RR/HX	30.0	67.6	39.3	55.6	7.1	35.6	3268	34347
Mycogen	TMF2L416	28.2	66.2	39.7	56.7	8.1	33.2	3304	32662
Mycogen	TMF2N422	27.2	66.2	39.4	58.4	7.8	34.6	3367	32033
Dekalb	DKC45-79	28.3	66.9	39.2	53.2	7.5	34.9	3219	31915
LICA	99 S7	27.9	67.5	39.5	53.6	7.7	34.1	3246	31688
Hyland	HL S047	27.4	66.1	40.4	57.3	8.0	33.1	3285	31494
LICA	UFO 105B6	25.0	69.4	39.8	69.0	7.7	32.6	3525	30785
Growmark FS	4282VT3	26.4	66.9	39.0	56.5	7.3	35.8	3316	30637
Garst	88H48GT	26.3	64.9	38.4	54.8	7.3	36.7	3308	30452
Hyttest Seeds	TNT-92RR	25.7	67.3	39.8	57.4	7.7	34.8	3336	29956
TA Seeds	TA370-00	26.0	65.7	37.3	51.5	7.7	37.6	3263	29737
NK Seeds	N27B-CB/LL/RW	26.2	64.9	39.6	52.8	7.9	34.0	3229	29597
Doebler's	467BVR	26.0	67.8	41.3	52.9	7.6	33.0	3172	28859
Hyttest Seeds	HT7220 BT/RR	25.0	65.4	39.5	53.0	7.9	34.6	3253	28471
TA Seeds	TA310-00F	24.5	65.6	40.9	56.7	8.2	32.3	3267	27970
Hyland	HL SR42	24.0	67.7	39.1	57.9	8.1	33.6	3317	27894
Dyna-Gro Seed	53K69	24.7	68.1	40.5	52.7	7.5	33.7	3159	27393
Pioneer	38H08	24.9	63.0	41.2	52.1	7.8	31.7	3112	27158
Doebler's	377BVR	23.5	66.3	39.2	54.3	8.1	33.8	3240	26654
LICA	9707 BT/LL	22.6	64.2	36.5	55.1	7.9	38.0	3362	26508
Dekalb	DKC41-60	23.2	66.4	41.4	52.8	8.0	31.3	3130	25355
Pioneer	38N87	22.8	64.6	38.8	51.8	8.7	32.1	3162	25213
96-100 day Relative Maturity									
DEKALB	DKC50-44	29.7	67.3	38.4	56.9	7.4	36.4	3350	34851
TA Seeds	TA489-00F	28.8	66.6	41.4	55.9	7.9	32.4	3234	32697
Pioneer	36Y26	26.7	66.3	37.6	56.0	8.3	35.6	3345	31272
Fielder's Choice	NG6520	27.0	67.7	39.1	53.6	7.8	35.1	3235	30561
TA Seeds	TA476-11	27.6	65.0	41.4	51.4	7.5	33.6	3140	30286
Pioneer	38H72	23.0	65.7	37.6	54.1	8.1	35.7	3306	26640
	LSD 0.10	3.47	1.10	1.58	1.66	0.28	2.16	85	4132
	Overall Mean	26.0	65.8	39.4	55.1	7.8	34.2	3264	29758

Evaluation of Corn Silage Hybrids for NNY for 2009 Project

The evaluation of corn silage hybrids for NNY for 2009 was funded by the Northern New York Agricultural Development Program with support from various seed companies.

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For more information on Cornell's corn hybrid trials, contact: your local Cornell Cooperative Extension office: Clinton-Essex: 518-962-4810; Franklin: 518-483-7403; Jefferson: 315-788-8450; Lewis: 315-376-5270; St. Lawrence: 315-379-9192; or Bill Cox, Department of Crop and Soil Sciences, Cornell University, wjc3@cornell.edu, 607-255-1758.

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The Northern New York Agricultural Development Program selects and prioritizes research the results of which can be practically applied to farms in the six-county region of Northern NY: Jefferson, Lewis, St. Lawrence, Franklin, Clinton and Essex counties.

To learn more about the Northern New York Agricultural Development Program, contact Co-Chairs Jon Greenwood, 315-386-3231, or Joe Giroux, 518-563-7523; or R. David Smith, Cornell University, 607-255-7286. or visit www.nnyagdev.org on the web. ♦



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