

## 2023 Corn silage overview

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The 2023 growing season varied greatly in the Northeast. These extremes were captured in fields across locations of the NY VT Corn Silage Hybrid Evaluation Program (Tables 1 and 3). This level of variation offers the opportunity to contrast hybrid performance in diverse environments (Table 5). However, it may also reduce the usefulness of studying broader forage quality trends (Figure 1).

**TABLE 1**

2023 Growing season summary by location

<b>Maturity group</b>	<b>Location</b>	<b>Planting date</b>	<b>Harvest date</b>	<b>Seasonal rainfall (inches)</b>	<b>Seasonal GDD (86/50)</b>
86 – 98 day RM 39 entries	Willsboro, NY*	May 15	-	-	-
	Oakfield, NY	May 12	Sept. 15	13.2	2,097
	Alburgh, VT	May 10	Sept. 15	26.8	2,130
99 – 110 day RM 36 entries	Madrid, NY	May 9	Sept. 27	16.8	2,236
	Aurora, NY	May 16	Sept. 21	17.8	2,087
	Alburgh, VT	May 10	Sept. 22	27.2	2,203

\*The Willsboro location was lost due to extreme weather patterns that impacted corn growth

As 2023 corn silage sits in storage, hopefully fermenting for the next few months before being fed-out, it is helpful to understand how this crop might feed compared to previous years. These results offer an indicator of what to expect when transitioning into feeding the 2023 crop. The location-to-location weather variability in 2023 increases the importance of focusing on location-specific data where weather patterns were most similar to the farm's location.

Further, it is helpful to take samples of forage at harvest, and again prior to feed-out, to understand the opportunities and challenges as this year's crop is fed. Also, remember that while fresh samples are a very helpful indicator, some characteristics of the forage will change during fermentation, particularly starch digestibility. A summary of expected changes is described in Table 2.



**TABLE 2**

General direction of nutritional changes to corn silage during fermentation

Dry Matter	↘	Dependent on level of DM loss (shrink) during fermentation
Starch Digestibility	↗	Ferment for a minimum of three to four months <sup>1</sup>
Starch Content	-	Could have slight changes in composition
Processing Score	-	Changes observed have not been consistent <sup>2,3</sup>
Fiber Digestibility	-	No change <sup>4</sup>
Mycotoxins	↗*	Majority originate in the field. Very few are storage related. Not alive – will not “grow”. Any increases in storage are predominately associated with increased concentration (DM loss). <b>*Need to be present at harvest.</b>
Yeast and Molds	↗*	Increased risk with poor fermentation, low density, poor face management. <b>*Need to be present at harvest.</b>

<sup>1</sup>[Influence of ensiling on the digestibility of whole-plant corn silage. Wisconsin Focus on Forage](#)<sup>2</sup>[Does fermentation change corn silage processing? Ferraretto](#)<sup>3</sup>[Kernel processing information series. Lawrence and Kerwin](#)

Precipitation trends of note include the droughty conditions in Western NY (Oakfield) and wet conditions in the eastern portion of the trial region (Table 3a). Planting dates in 2023 were similar to 2022; however, with respect to Growing Degree Day (GDD) accumulation, the similarities end there as it took considerably more calendar days to accumulate similar GDD totals at many locations and plot average whole plant dry matter (DM) varied in reference to GDD accumulation (Table 3b and 4).

**TABLE 3A**

Rainfall (inches) comparison by location and year

Maturity group	Location	2017	2018	2019	2020	2021	2022	2023
80 – 95 day RM	Willsboro, NY	17.7	10.2	12.4	10.5	14.0	15.0	-
	Oakfield, NY	13.8	8.3	12.4	12.6	15.4	9.7	13.2
	Alburgh, VT	20.3	10.8	14.2	15.5	12.5	22.5	26.8
96 – 110 day RM	Madrid, NY	16.8	15.3	16.5	11.4	21.3	14.6	16.8
	Aurora, NY	20.7	12.1	11.9	10.4	14.9	18.8	17.8
	Alburgh, VT	20.3	10.8	18.0	15.7	12.8	25.0	27.2

**TABLE 3B**

Growing Degree Day (GDD, 86/50) comparison by location and year

Maturity group	Location	2017	2018	2019	2020	2021	2022	2023
80 – 95 day RM	Willsboro, NY	2,131	2,233	2,039	2,073	2,155	2,099	-
	Oakfield, NY	2,004	2,195	1,954	2,163	2,185	2,041	2,097
	Alburgh, VT	1,928	2,265	1,971	2,099	2,193	2,117	2,130
96 – 110 day RM	Madrid, NY	1,975	2,204	2,022	2,144	2,220	2,138	2,236
	Aurora, NY	2,087	2,283	1,972	2,231	2,175	2,132	2,087
	Alburgh, VT	2,077	2,134	2,096	2,198	2,242	2,264	2,203

**TABLE 4**

Comparison of calendars and GDD accumulation from planting to harvest, 2022 and 2023

Maturity group	Location	2022				2023			
		Planting Date	Calendar Days	GDD Accum.	Avg. DM	Planting Date	Calendar Days	GDD Accum.	Avg. DM
80 – 95 day RM	Willsboro, NY Oakfield, NY Alburgh, VT	May 13	113	2,099	30.3	May 15	-	-	-
		May 11	110	2,041	37.4	May 12	126	2,097	36.2
		May 13	122	2,117	33.6	May 10	128	2,130	31.6
96 – 110 day RM	Madrid, NY Aurora, NY Alburgh, VT	May 10	128	2,138	34.1	May 9	141	2,236	35.9
		May 13	118	2,132	31.7	May 16	128	2,087	34.8
		May 10	134	2,264	33.0	May 10	135	2,203	30.8

With these observations in weather patterns, it can be useful to look at key forage quality parameters and how the season impacted their relative values compared to previous years. Figures 1a and 1b show the differences in undigested neutral detergent fiber after 240 hours of in vitro fermentation (uNDF240) and starch content, respectively. The data in Figures 1 and Table 5 represents the last six growing seasons (2017 to 2023), with results combined from all locations by year.

Starch content is measured as a percentage of the whole sample. For this reason, factors such as ear to stover ratio, kernel size, and kernel DM impact this value. Despite variation in weather patterns and average whole plant DM at harvest (Table 5), the trend of high starch levels measured in this program continued in 2023 (Figure 1b), suggesting that despite the variability across locations, conditions were conducive to good kernel development.

The documented influence of rainfall on fiber digestibility suggests that the location specific data, presented in Table 5, provides a better indicator of the impact on 2023 corn silage for a specific growing environment than the general trend presented in Figure 1a. However, when considering the regional impact on feeding programs with 2023 corn silage, the overall profile (Figure 1a) suggests the level of undigestible fiber (uNDF240) will support the need to make necessary changes to feeding programs to account for reduced fiber digestibility in the 2023 crop, particularly in the eastern portions of the region.

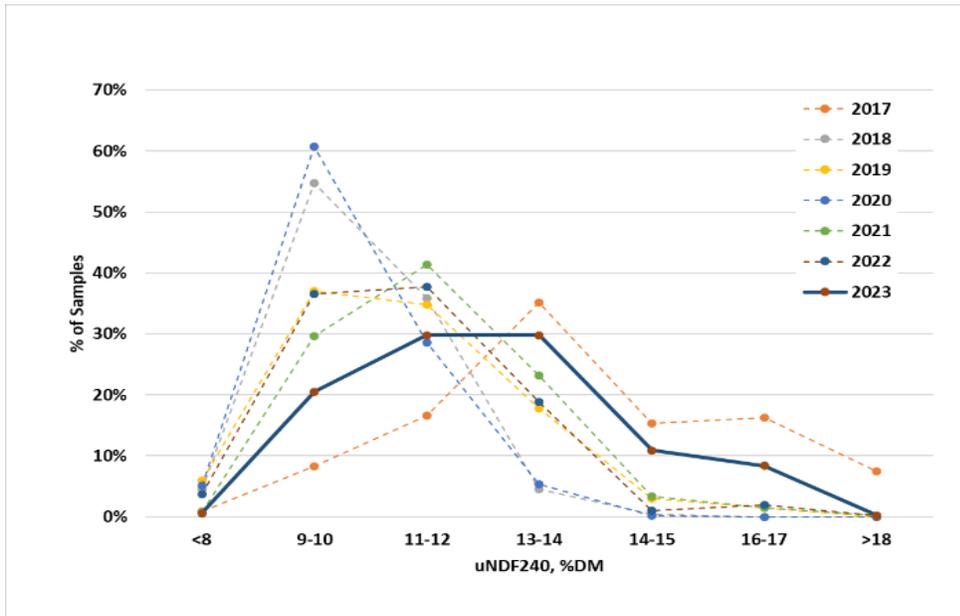
Each year brings its own challenges and opportunities. Given the variation in growing conditions across the region, it is critical to test your own forages to understand the site-specific impacts of the growing season.

It is important to evaluate this data in the context of your farm when selecting hybrids. The top performing hybrid at any one location, or in any one category, may not be a good fit for a feeding program. Factors that influence this vary by farm, but include land base, soil resources, forage inventory, quality of available hay crops, access and cost of supplemental ingredients, and expectations of cow performance.

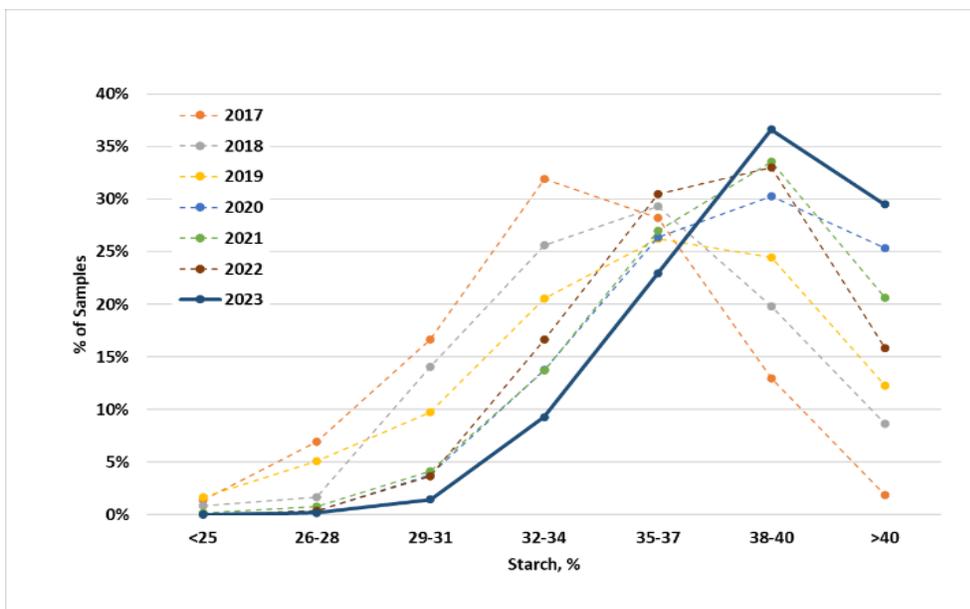
The trial results and location averages serve as a means to calibrate hybrid performance to a particular growing season. These averages can be used in conjunction with a company's data on hybrids in their lineup, including hybrids not entered into these trials, to understand how a hybrid performed relative to what is realistic for a given growing season.

It is important to recognize the companies that make these trials possible through their entry of hybrids. The following companies participated in the 2023 trials: Brevant, Channel, CNI-Integra, Dekalb, Growmark FS, Hubner Seed, Kingfisher (King's Agri-seeds), Masters Choice, Nutrien Ag Solutions - Dyna-Gro, Pioneer, Redtail (King's Agri-seeds), Revere Seed, Schlessmann's (Gold Star Feed and Grain), Seed Consultants, Seedway, Stine Seed, and Syngenta – NK.

NY VT Corn silage hybrid evaluation program reports can be found at: [blogs.cornell.edu/varietytrials/corn-silage/](https://blogs.cornell.edu/varietytrials/corn-silage/).



**FIGURE 1A**  
Percent of samples at different levels of uNDF240 by year



**FIGURE 1B**  
Percent of samples at different levels of starch content by year

**TABLE 5:** Whole Plot Means for Key Corn Silage Performance Indicators

Relative Maturity Group	Growing Season	Location	Yield, 35% DM	Dry Matter	Starch Content	aNDFom	30 hr NDFD	120 hr NDFD	240 hr uNDFom
			tons/acre	%	% DM	% DM	% NDFom	%NDFom	% DM
85-98 day RM	2023	Oakfield, NY	32.0	36.3	41.7	33.7	56.2	63.4	11.3
		Willsboro, NY	-	-	-	-	-	-	-
		Alburgh, VT	25.2	31.6	38.2	37.3	47.7	56.8	15.2
80-95 day RM, 2017 -2022	2022	Oakfield, NY	21.0	37.4	36.7	37.5	60.5	69.1	10.4
		Willsboro, NY	25.9	30.3	37.2	35.4	60.6	67.9	10.3
		Alburgh, VT	27.8	33.6	36.2	36.2	55.8	66.3	11.2
	2021	Oakfield, NY	29.1	37.7	40.3	33.0	57.7	65.1	10.6
		Willsboro, NY	23.6	32.1	39.0	34.6	56.3	67.4	10.3
		Alburgh, VT	19.9	36.3	37.9	36.1	52.8	64.1	12.0
	2020	Albion, NY	19.3	36.6	41.7	32.5	60.2	68.9	9.2
		Willsboro, NY	16.5	30.6	34.7	37.7	60.4	71.9	9.5
		Alburgh, VT	19.8	32.4	37.8	35.9	56.0	65.6	11.4
	2019	Albion, NY	26.0	31.9	35.1	36.5	59.1	66.3	11.3
		Willsboro, NY	19.2	32.6	36.9	35.8	60.5	67.6	10.6
		Alburgh, VT	23.4	33.7	36.5	37.8	61.6	67.6	11.2
	2018	Albion, NY	19.2	36.2	39.2	34.2	56.1	69.4	10.0
		Willsboro, NY	18.5	35.0	34.9	35.7	62.0	70.0	9.7
		Alburgh, VT	18.3	33.3	31.0	39.0	56.2	67.4	11.8
	2017	Albion, NY	25.2	30.8	32.3	37.2	59.1	69.8	10.1
		Willsboro, NY	19.2	31.3	38.1	39.5	56.3	66.8	12.1
		Alburgh, VT	27.5	31.8	34.4	38.9	53.2	62.7	13.4
99-110 day RM	2023	Aurora, NY	25.0	34.8	38.4	36.1	57.7	65.2	11.4
		Madrid, NY	34.5	35.9	39.9	35.7	55.6	63.2	12.2
		Alburgh, VT	24.4	30.8	38.1	38.4	49.5	59.8	14.4
96-110 day RM, 2017 -2022	2022	Aurora, NY	20.6	31.7	37.2	37.4	61.5	70.0	10.0
		Madrid, NY	31.1	34.1	39.6	36.0	55.1	62.5	12.5
		Alburgh, VT	27.3	33.0	38.7	36.5	52.3	60.7	13.2
	2021	Aurora, NY	29.3	35.2	37.8	38.5	54.1	62.7	13.3
		Madrid, NY	32.5	32.3	36.9	37.2	55.4	62.6	12.9
		Alburgh, VT	23.9	39.8	37.2	38.6	56.9	66.9	11.7
	2020	Aurora, NY	17.1	36.0	38.2	36.0	61.1	68.3	10.4
		Madrid, NY	23.6	34.1	40.1	32.9	60.3	67.6	9.8
		Alburgh, VT	25.1	36.4	37.9	36.5	55.4	65.6	11.6
	2019	Aurora, NY	27.1	34.7	38.3	36.9	55.5	62.2	12.9
		Madrid, NY	27.4	28.6	30.7	38.0	58.4	65.5	12.1
		Alburgh, VT	24.3	35.4	39.3	35.5	61.6	71.1	9.2
	2018	Aurora, NY	21.7	38.2	38.8	35.3	59.9	67.7	10.4
		Madrid, NY	28.6	32.9	35.4	35.9	61.2	69.9	9.8
		Alburgh, VT	23.3	34.9	34.2	38.3	55.2	66.0	12.0
	2017	Aurora, NY	26.0	31.9	31.2	42.6	54.5	63.8	14.4
		Madrid, NY	31.9	35.2	34.8	41.3	50.6	59.4	15.9
		Alburgh, VT	28.5	32.7	35.3	39.8	52.7	61.4	14.3