

~~2021~~ Vermont  
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**2021 VERMONT ORGANIC SILAGE CORN PERFORMANCE TRIAL**  
**Dr. Heather Darby, University of Vermont Extension**  
**heather.darby[at]uvm.edu**

The University of Vermont Extension Northwest Crops and Soils Program conducted an organic silage corn variety

The soil type at the Alburgh location is a Benson rocky silt loam (Table 3). The seedbed was prepared with fall moldboard plow followed by spring disk harrow and field cultivation. The previous crop was perennial forage including grass and some legumes.

Plots were planted on 14-May with a 4-row cone planter with John Deere row units fitted with Almaco seed distribution units (Nevada, IA) at a rate of 34,000 seeds per acre, spaced 30 inches between rows.

Weed control was through mechanical cultivation including one pass with a tinweeder (16-May) followed by row cultivation on 28-May and again on the 1-Jun. Plots were topdressed with 10-0-0 organic approved fertilizer from North Country Organics (Brandon, VT).

The corn was harvested with a John Deere 625 chopper and a wagon fitted with scalp drums. Plots were harvested by relative maturity on 14-Sep, 21-Sep, and 28-Sep. An approximate 1b. subsample was taken from each plot and dried to calculate dry matter content. The dried subsamples were first ground with a Wiley sample mill to a 2mm particle size, followed by a cyclone sample mill to 1mm particle size (UDY Corporation). The samples were then analyzed for quality at the E. E. Cummings Crop Testing Laboratory at the University of Vermont (Burlington, VT) with a FOSS NIRS (near infrared reflectance spectroscopy) DS2500 Feed and Forage analyzer. The NIR procedures and corn silage calibration from Cornell University Forage Laboratories (Geneva, NY) were used to determine crude protein (CP), starch, lignin, ash corrected neutral detergent fiber (aNDFom), and neutral detergent fiber digestibility (NDFD, 240h).

**Table 3. Organic silage corn variety trial information, Alburgh, VT, 2021.**

Location	Borderview Research Farm Alburgh, VT
Soil type	Benson rocky silt loam
Previous crop	Perennial forage
Row width (in)	30
Plot size (ft)	10 x 20
Seeding rate (viable seeds <sup>1</sup> )	34,000
Planting date	14-May
Tillage operations	Spring disk, spike tooth harrow
Top dress fertilizer (lb a)	10-0-0 ProBooste(1000)
Weed control	Tinweed, Row cultivate
Harvest date	14-Sep 21-Sep, 28-Sep

240 hours. 30 hr NDFD is typically used when evaluating forage for ruminants as it is the actual passage time through the rumen. Research has demonstrated that lactating dairy cows consume more dry matter and produce more milk when fed forages with optimum NDFD. Forages with increased NDFD will result in higher energy values and, perhaps more importantly, increased forage intakes. Forage NDFD can range from 20 to 80% NDF. Total digestible nutrients (TDN) is a measure of the energy value in a feedstuff. Neutral detergent fiber expressed on an organic matter basis (aNDFom) is used when high ash content leads to ash remaining in the fiber residue. 240-hr uNDFom is the undigestible NDF on an organic matter basis after 240 hours in rumen fluid. This can cause an overvaluation of the NDF. NDF can cause nutritionists to underfeed fiber. Net energy lactation (NEAL) = 0.0 g 0 G S12 0 612 792 re9.13 n 2 0 1 0 0 1 53(n)11(ut) 106

**Table 4. Weather data for Alburgh, VT, 2021.**

Alburgh, VT	May	June	July	August	Sept
Average temperature (°F)	58.4	70.3	68.1	74	62.8
Departure from normal	-0.03	2.81	-4.31	3.25	0.14
Precipitation (inches)	0.66	3.06	2.92	2.29	4.09
Departure from normal	-3.1	-1.2	-1.14	-1.25	0.42
Growing Degree Days (50°F)	334	597	561	727	394
Departure from normal	33	73	-134	85	7

Based on weather data from a Davis Instruments Vantage Pro2 WeatherLink data logger. Historical averages are for 30 years of NOAA data (1991-2020) from Burlington, VT.

Varieties varied significantly in dry matter (DM) content and yield (Table 5). Ideally, silage should be harvested between 30% to 35% dry matter depending largely on the type of stock. The trial had a wide range of relative corn maturities, making harvest at the proper dry matter for each 1(e)9( ) TJ

Corn silage varieties varied significantly in terms of quality (Table 6). The average protein concentration was 8.39%, and the highest content of 9.28% produced by variety 30K84. Overall, ADF and NDFom values were indicative of adequate quality corn silage, averaging 24.5% and 42.0% respectively. There were no significant differences in either ADF or NDFom between varieties. Variety 34K79 was the top performer in lignin (2.60%) and in starch (36.4%). The average TDN was 36.2% and the 240-hr uNDFom was

**Table 6. Quality characteristics of 14 organic corn silage varieties, 2021.**

Variety	RM	CP	ADF	aNDFom	Lignin	Starch	TDN
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