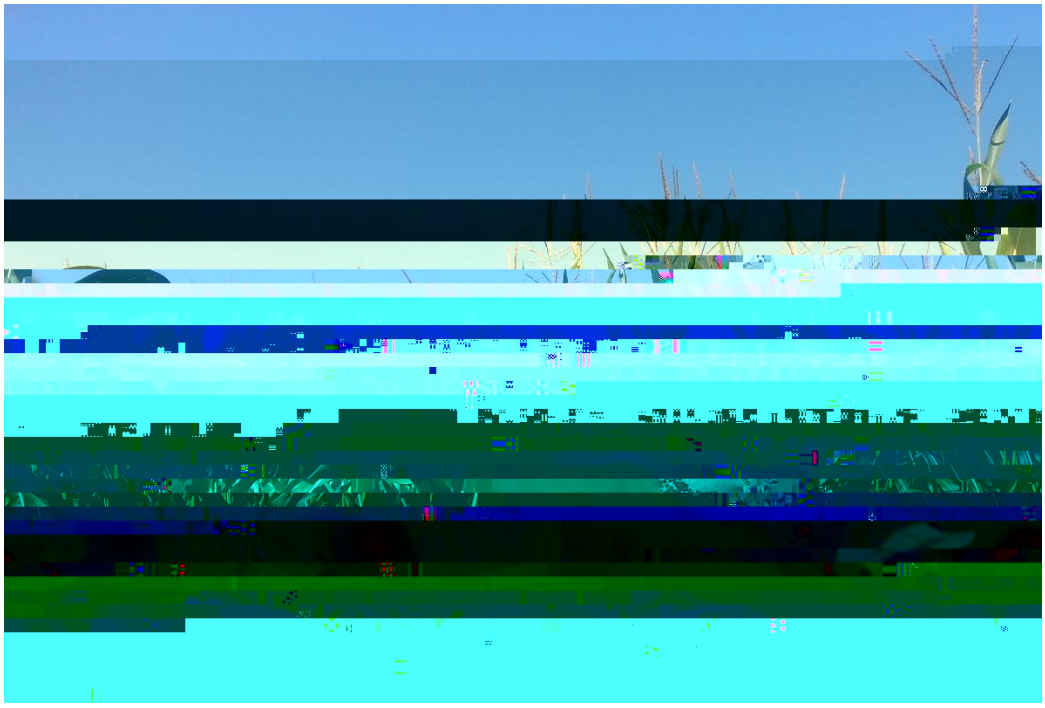
2020 Vermont Organic Silage Corn Performance Trial



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THE UNIVERSITY OF VERMONT EXTENSION

2020 VERMONT ORGANIC SILAGE CORN PERFORMANCE TRIAL

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The University of Vermont Extension Northwest Crops and Soils Program conducted an organic silage corn variety trial in 2020 to provide unbiased performance comparisons of commercially available varieties. To determine varieties that are best suited to this production system and our region's climate, we evaluated 9 commercially available organic corn silage varieties. It is important to remember that the data presented are from a replicated research trial from only one location in Vermont and represent only one season. Crop performance data from additional tests in different locations and over several years should be compared before making varietal selections.

MATERIALS AND METHODS

In 2020, organic corn silage varieties were evaluated at Borderview Research Farm in Alburgh, Vermont. The plot design was a randomized complete block with four replications. Treatments were nine corn silage varieties submitted by two companies (Table 1). These varieties were evaluated for silage yield and quality. Relative maturity and varietal characteristics are provided in Table 2.

Table 1. Participating companies and contact information.

Albert Lea Seed	Blue River Hybrids
1414 West Main St, PO Box 127 Albert Lea, MN 56007 (800) 352-5247	2326 230th

seeds ac^{-1}. Plots were 20’ long and consisted of four rows of corn 30” apart. Plots were thinned to a target population of 34,000 seeds ac^{-1} on 25-Jun.

Weeds were controlled by early season tine weeding on 29-May and 9-Jun, and mechanical row cultivation on 23-Jun. The corn was harvested with a John Deere 2-row chopper and a wagon fitted with scales. Plots were harvested by relative maturity on 10-Sep, 16-Sep, and 23-Sep. An approximate 1 lb 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 BT/F1 2 792/F1 2 .7826wF1 1on

underfeed fiber. Net energy lactation (NE_L) is estimated energy value of feed used for maintenance plus milk production during dairy cow lactation or last two months of gestation for dry, pregnant cows.

Yield data and stand characteristics were analyzed using mixed model analysis using the mixed procedure of SAS (SAS Institute, 1999). Replications within trials were treated as random effects, and varieties were treated as fixed. Variety mean comparisons were made using the Least Significant Difference (LSD) procedure when the F-test was considered significant ($p<0.10$). Variations in yield and quality can occur due to variations in genetics, soil, weather, and other growing conditions. Statistical analysis makes it possible to determine whether a difference among varieties is real or whether it might have occurred due to other variations in the field. At the bottom of each table a LSD value is presented for each variable (i.e. yield). Least Significant Differences (LSDs) at the 0.10 level of significance are shown. Where the difference between two varieties within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure that for 9 out of 10 times, there is a real difference between the two varieties. Varieties that were not significantly lower in performance than the highest variety in a column are indicated with the same letter. In this example, variety C is significantly different from variety A but not from variety B. The difference between C and B is equal to 1.5, which is less than the LSD value of 2.0. This means that these varieties did not differ in yield. The difference between C and A is equal to 3.0, which is greater than the LSD value of 2.0. This means that the yields of these varieties were significantly different from one another. The top yielding variety C is indicated in bold.

RESULTS

Weather data was recorded with a Davis Instrument Vantage Pro2 weather station, equipped with a WeatherLink data logger at Borderview Research Farm in Alburgh, VT (Table 4). The region experienced drought and warmer than average temperatures throughout much of the main growing season. While May was cooler than average, from June to August, temperatures were higher than normal. In July, the average temperature in Alburgh, VT was 4.17° F higher than normal. Above average temperatures coincided with little rainfall from May to July. In both May and June, there were periods without rain that lasted nearly two weeks. July was particularly hot and dry.

ry matter (DM) content at harvest (Table 5). The
d ranged from 29,621 plants ac^{-1} (0.55.02UP) to
ent at harvest was 38.3% and ranged from 33.7%
dry matter. At the time of harvest, most varieties
dry matter percentage for the ensiling process.
tion, cause inadequate packing leading to mold
palatability. In years with droughty conditions,
eading and may reach optimal levels earlier than
ontent early and constantly is crucial. Corn yields
eraging 22.2 tons ac^{-1}. The highest yielding variety
atistically different from five other high yielding

rieties, 2020.

vest M	**Yield, 35% DM** tons ac^{-1}
5[c]	19.3[b]
[bc]	19.4[b]
7[d]	21.8[ab]
[abc]	20.6[b]
3[c]	22.1[ab]
[abc]	24.6[a]
[bc]	24.3[a]
3[ab]	23.9[a]
7[a]	24.0[a]
0	3.00
3	