2019 Vermont Non-GMO Corn Silage Performance Trial

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Plots were planted on 29-May with a 4-row cone planter with John Deere row units fitted with Almaco seed distribution units (Nevada, IA) at a rate of 40,000 seeds ac^{-1}. Plots were 20' long and consisted of four rows of corn 30" apart. Plots received liquid starter fertilizer (9-18-9) at a rate of 5 gal ac^{-1} at planting. On 24-Jun, plots were sprayed with 3pts Lumax EZ herbicide. On 29-Jun, corn was topdressed with 400 lb ac^{-1} of 28-0-23. On 27-Sep, the corn was harvested with a John Deere 2-row chopper and a wagon fitted with scales. An approximate 1 lb subsample was taken from each plot and dried to calculate dry matter content. The dried subsamples were ground on a Wiley sample mill to a 2mm particle size and to 1mm particle size on a cyclone sample mill from the UDY Corporation. The samples were then analyzed for quality at the University of Vermont Cereal Testing Lab (Burlington, VT) with a FOSS NIRS (near infrared reflectance spectroscopy) DS2500 Feed and Forage analyzer.

Table 3. Non-GMO silage corn variety trial information, Alburgh, VT, 2019.

Location	**Borderview Research Farm Alburgh, VT**
Soil type	Benson rocky silt loam
Previous crop	corn grain
Row width (in)	30
Plot size (ft)	10 x 20
Seeding rate (seeds ac^{-1})	40,000
Planting date	29-May

Yield data and stand characteristi
of SAS (SAS Institute, 1999). Re
treated as fixed. Hybrid mean c
procedure when the F-test was co

Variations in yield and quality ca
conditions. Statistical analysis m
or whether it might have occurred
value is presented for each variab
significance are shown. Where th
than the LSD value at the bottom
difference between the two hybri
highest hybrid in a particular colu
different from hybrid A but not fr
equal to 1.5, which is less than the
did not differ in yield. The differ
greater than the LSD value of 2.0
significantly different from one a
not significantly lower than the to

Weather data was recorded with
WeatherLink data logger at Borde
cooler and wetter than normal bu
normal temperatures and little rai
period, which occurred around th
have negatively impacted corn pla
and poor tip fill experienced in co
corn with well-needed Growing D
2254 GDDs accumulated May-Se

Table 4. Weather data for Alburgh

Alburgh, VT
Average temperature (°F)
Departure fro15.24 re

Corn silage varieties varied statistically in population and yield (Table 5). The variety with the highest population was SW 2360 (36,881 plants ac^{-1}) and the lowest was O.71-90UPGS with 34,049 plants ac^{-1}. Due to adverse spring planting conditions, higher seeding rates were implemented to account for cold and wet soil conditions. At the time of harvest, plant populations were slightly higher than the recommended 34,000 plants ac^{-1}. Yields also varied statistically. The top yielding variety was 42-92GS with 28.1 tons ac^{-1}. This was statistically similar to just one other variety, SW 3980 (23.9 tons ac^{-1}). Yields ranged from 19.4 to 28.1 tons ac^{-1}.

Table 5. Harvest data for 10 non-GMO corn varieties, 2019.

Variety	RM	Plant populations	Harvest DM	Yield, 35% DM

Table 6. Corn silage quality characteristics of 10 non-GMO corn varieties, 2019.

Variety	RM	CP	ADF	NDF	Lignin	Starch	TDN	240 hr uNDF	30 hr NDFD	Milk	
		----------% DM ----------						% DM	% NDF	lbs ton^{-1}	lbs ac^{-1}
SW 2360	87	8.10	22.1*	39.1	**2.6**	**37.5**	**64.0**	8.50	61.9	3549	27987
O.71-90UPGS	90	7.43	26.1	43.5	2.9	31.1	63.3	9.60	60.7	3595	27104
42-92GS	92	7.63	25.0	43.9	2.9	31.0	62.3	9.20	62.9	3428	**33211**
SW 3750	93	7.57	23.4*	39.9	2.9	34.0*	6.03	9.00	60.8	3574	25551
SW 3937BMR	94	**9.00**	28.4	46.0	3.0	27.1	62.3	**6.50**	**71.5**	3552	24224
O.82-95	95	7.57	26.3	44.7	3.1	30.9	62.3	10.0	62.2	3547	28395*
SW 3980	98	7.50	23.1*	39.5	**2.6**	35.7*	63.3	8.90	62.2	3651	30575*
O.69-01	101	8.63*	25.1	41.9	3.0	29.5	62.3	9.60	64.7	3639	28527*
SW5410	103	7.93	25.0	41.8	3.1	30.4	62.7	10.2	60.6	3589	26383
O.51-04PGS	104	7.97	**21.4**	**38**	3.2	35.8*	63.3	8.00	64.4	**3667**	27388
LSD (p = 0.10)	NA	0.646	3.39	NS	NS	4.83	NS	1.34	3.1	NS	4994
Trial mean	96	7.93	24.6	41.8	2.9	32.3	62.9	8.95	63.2	3579	27934

*Varieties with an asterisk are not significantly different than the top performer in **bold.**

N/A - statistical analysis not completed for this parameter.

NS - not statistically significant.

Figure 1 at the end of this document displays the projected milk production, in lbs ton^{-1} and lbs ac^{-1} of the trialed corn silage varieties. The dotted lines indicate the trial averages for these parameters. This figure provides a visualization of yield and quality but does not state that these differences are statistically significant (Tables 5 and 6).

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Figure 1. Milk production of 10 non-GMO corn varieties, 2019.
Shows relationship between milk per ton and milk per acre. Dotted lines represent the mean milk per ton and milk per acre for the trial.