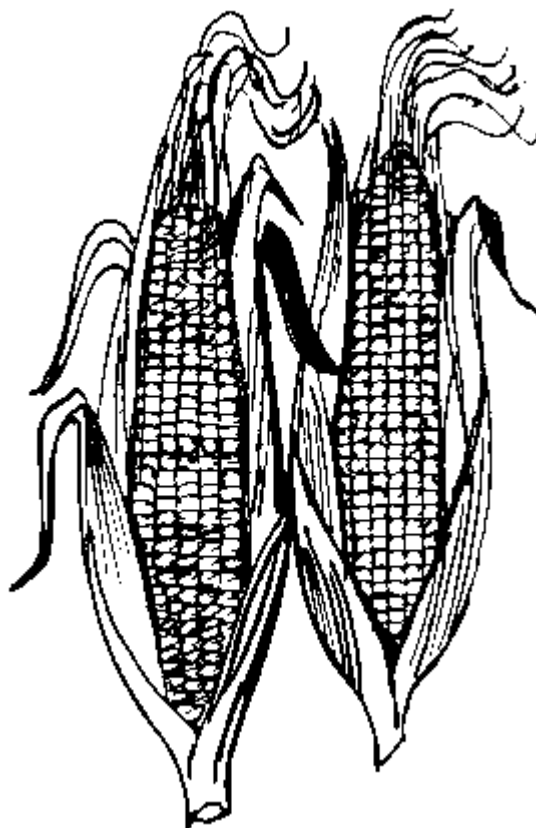


2006
Northwest Vermont Corn Hybrid
Performance Trial Results



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2006 NORTHWEST VERMONT CORN SILAGE HYBRID PERFORMANCE TRIALS

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In 2006, the University of Vermont Extension conducted a hybrid corn evaluation program, in cooperation with local farmers and seed companies. The purpose of the program is to provide unbiased performance comparisons of hybrid corn available in the northern part of Vermont. It is important to remember, however, that the data presented are from a single test at only a few locations. Hybrid-performance data from additional tests in different locations and often over several years should be compared before you make conclusions.

TESTING PROCEDURE

In 2006, silage performance trials were planned for five locations; however the severe weather conditions resulted in only two trials in Northwest Vermont. Local farmers were asked to host the trials on their farms and seed companies submitted hybrids for evaluation in each location. Companies and contact names are listed in Table 1.

Table 1. Participating Companies and Local Contact Information

Mycogen	Pioneer	Seedway
Claude Fortin District Sales Manager Highgate, VT 802-363-2803	Jacob Bourdeau Bourdeau Bros. Sheldon, VT 802-933-2277	Tony Rossier District Sales Manager St. Albans, 05478 802-363-7121
Dekalb/Monsanto	TA Seeds	LICA
Michael Kosinski District Sales Manager Westfield, MA 413-530-0267	Jim Young District Sales Manager Richmond, VT 802-578-9400	Carl Key General Manager Riverhead, NY 631-727-2212

Although we planned to conduct both early and later corn maturity trials, the two successful trials this year were late maturity trials. The specific hybrids and relative maturities are listed for each trial location in Table 2. The hybrid Relative Maturities were **provided by the companies**.

Table 2. Hybrids evaluated at two Northwest locations

Company	Variety			Location	
	Hybrid	RM	Traits	Sheldon	North Hero
Asgrow	RX655RR2	107	RR2, YGCB	X	X
Dekalb	DKC57-79	107	RR2, YGPL	X	X
Asgrow	RX702RR2/YGCB	110	RR2, YGCB	X	X
LICA	307	105		X	X
LICA	1084L	108		X	X
LICA	1094RR	106	RR	X	X
LICA	1056S	105		X	X
LICA	UFO1056B	105	BMR, BT, LL, RR	X	X
Mycogen	TMF2T497	100	Leafy	X	X
Mycogen	F2F566	105	BMR	X	X
Mycogen	TMF2Q714	110	HX1	X	X
Pioneer	31G68	114	YBCB	X	
Pioneer	33D13	109	HX1 CB, LL	X	X
Pioneer	34B39	111		X	
Pioneer	33H25	113			X
Seedway	SW5501L	105	Leafy	X	
Seedway	SW6601L	107	Leafy	X	
TA Seeds	TA557-00F	105	Leafy	X	
TA Seeds	TA5753	109	RR2, YGCB	X	

Seasonal precipitation and temperature recorded at weather stations close in proximity to the 2006 sites are shown in Table 3. This season brought near average temperatures but higher than normal rainfall. In general, silage yields were below average for most farms including our trial locations. Reduced yields can be attributed to an over abundance of early summer rain and cool late summer conditions.

Table 3. 2006 Temperature and Precipitation Summary

Location	May			June		July		August		September	
	Temp.	Average	Departure*	Average	Departure	Average	Departure	Average	Departure	Average	Departure
	Precip.	Total	Departure	Total	Departure	Total	Departure	Total	Departure	Total	Departure
Sheldon	Temp.	58	+2	66	+2	72	+3	65	-2	60	+2
	Precip.	6.8	+3.0	8.2	+4.4	3.5	-1.0	5.2	+1	3.3	-1.0
North Hero	Temp.	58	+1	66	+0	73	+2	67	-2	61	-1
	Precip.	7.1	+4.2	5.9	+2.9	2.5	-1.0	3.7	+1.0	2.7	-0.8

* Departure from 29 year average (1971-2000)

CULTURAL PRACTICES

The seedbed at each location was prepared by conventional tillage methods. Fertilizer and herbicides were applied. Plots were planted with a four row corn planter. Plots were planted the length of the field and averaged 350 feet in length. The four row plots were harvested with a self propelled corn chopper. Yield was measured by weighing wagons on drive-up platform scales. A subsample of corn was taken and analyzed for forage quality by the DairyOne Forage Laboratory in New York. Information for each location is summarized in Table 4.

Table 4. Individual Trial Information - 2006

Trial Information	Trial Location & Cooperator	
	Sheldon Andy Brouillette & Family	North Hero Andre Quintin & Family
Soil type	Sandy loam	Sandy loam
Previous Crop	Corn	Corn
Row Width (in.)	30	30
Planting date	10-May	11-May
Harvest date	25-Sep	26-Sep
Average final stand (plants/A)	30,800	28,000
Tillage operations	Spring chisel	Spring chisel
Manure (gal/acre)	Spring applied - 4000 gal/acre	Fall applied - 3000 gal/acre
Starter fertilizer (lbs/A)	10-20-20 @ 150 lbs/a 45 lbs N/acre	10-20-20 @ 150 lbs/a 30 lbs N/acre
Other fertilizer (lbs/A)	sidedressed	sidedressed

SILAGE QUALITY

Silage quality was analyzed using wet chemistry techniques at the DairyOne Forage Laboratory in New York. Plot samples were dried, ground and analyzed for crude protein (CP), neutral detergent fiber (NDF), 30h *in vitro* digestibility (IVTD), and 30h digestible NDF (dNDF). Mixtures of true proteins, composed of amino acids, and nonprotein nitrogen make up the CP content of forages. The CP content of forages is determined by measuring the amount of N and multiplying by 6.25. The bulky characteristics of forage come from fiber. Forage feeding values are negatively associated with fiber since the less digestible portions of plants are contained in the fiber fraction. The detergent fiber analysis system separates forages into two parts: cell contents, which include sugars, starches, proteins, nonprotein nitrogen, fats and other highly digestible compounds; and the less digestible components

found in the fiber fraction. The total fiber content of forage is contained in the neutral detergent fiber (NDF). Chemically, this fraction includes cellulose, hemicellulose, and lignin. Because of these chemical components and their association with the bulkiness of feeds, NDF is closely related to feed intake and rumen fill in cows. Recently, forage testing laboratories have begun to evaluate forages for NDF digestibility. Evaluation of forages and other feedstuffs for NDF digestibility is being conducted to aid prediction of feed energy content and animal performance. Research has demonstrated that lactating dairy cows will eat more dry matter and produce more milk when fed forages with optimum NDF digestibility. Forages with increased NDF digestibility will result in higher energy values, and perhaps more importantly, increased forage intakes. Forage NDF digestibility can range from 20 – 80%.

The silage performance indices of milk per acre and milk per ton were calculated using a model derived from the spreadsheet entitled, “MILK2000” developed by researchers at the University of Wisconsin. Milk per ton measures the pounds of milk that could be produced from a ton of silage. This value is generated by approximating a balanced ration meeting animal energy, protein, and fiber needs based on silage quality. The value is based on a standard cow weight and level of milk production. Milk per acre is calculated by multiplying the milk per ton value by silage dry matter yield. Therefore milk per ton is an overall indicator of forage quality and milk per acre an indicator of forage yield and quality. Milk per ton and milk per acre calculations provide relative rankings of forage samples, but should not be considered as predictive of actual milk responses in specific situations for the following reasons:

- 1) equations and calculations are simplified to reduce inputs for ease of use.
- 2) farm to farm differences exist.
- 3) genetic, dietary, and environmental differences affecting feed utilization are not considered.

PRESENTATION OF DATA

Results for individual locations are listed in Table 5 and 6. Dry matter yields were calculated and then adjusted to 35% dry matter for the report. Within each trial, hybrids are ranked by dry matter at harvest. The numbers presented in the tables are an average of two replications. For each location, there is a figure displaying the relationship between milk per ton and milk per acre. The dotted lines dividing the figure into four quadrants represent the mean milk per ton and acre for the location. Therefore hybrids that fall above the lines performed higher than the average and hybrids below the lines performed below average. Lastly, a table has been included for each location to report yields. Hybrids with the same letter were not statistically different in yield.

LEAST SIGNIFICANT DIFFERENCE (LSD)

Variations in yield and quality can occur because of variations in genetics, soil, weather, and other growing conditions. Statistical analysis makes it possible to determine, whether a difference among hybrids 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 (LSD's) at the 10% level of probability are shown. Where the difference between two hybrids within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure in 9 out of 10 chances that there is a real difference between the two hybrids. Hybrids that were not significantly lower in performance than the highest hybrid in a particular column are indicated with an asterisk. In the example below hybrid A is significantly different from hybrid C but not from hybrid B. The difference between A and B is equal to 1.5 which is less than the LSD value of 2.0. This means that these hybrids did not differ in yield. The difference between A and C is equal to 3.0 which is greater than the LSD value of 2.0. This means that the yields of these hybrids were significantly different from one another. The asterisk indicates that hybrid B was not significantly lower than the highest yielding hybrid.

Hybrid	Yield
A	6.0
B	7.5*
C	9.0
LSD	2.0

RESULTS

Table 5. Sheldon – Late Maturity Silage Trial

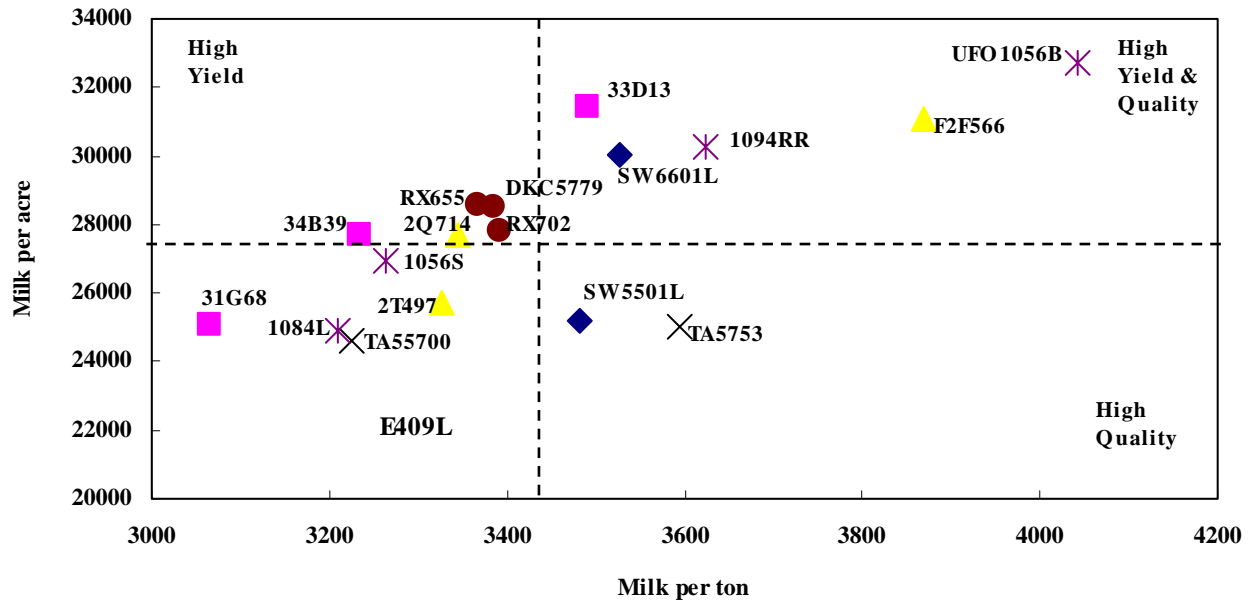
Company	Hybrid	DM at harvest %	Yield 65 % DM T/A	Forage Quality Characteristics					Milk Yield	
				CP	NDF	IVTD	dNDF	Nel	per Ton	per Acre
				%	%	%	%	%	lb/ton	lb/A
LICA	1084L	25.7	22.2	7.85	50.8*	77.0	54.5	0.69	3209	24917
Pioneer	31G68	25.8	23.2*	7.85	48.6*	75.5	50.0	0.68	3065	25097
TA Seeds	TA5753	26.6	19.9	8.00*	47.2*	81.5	61.0	0.75	3595	25032
Mycogen	F2F566	27.2	22.6	7.95*	43.0	85.0*	65.5*	0.77	3869*	31110
Mycogen	2Q714	27.6	23.7*	8.15*	41.7	80.0	52.0	0.74	3344	27693
Pioneer	34B39	27.9	24.5*	7.45	42.1	78.5	49.0	0.72	3233	27690
Seedway	SW5501L	28.6	20.7	7.90*	47.5*	80.0	58.5	0.74	3482	25199
Seedway	SW6601L	28.7	25.1*	8.40*	48.0*	81.0	60.0	0.74	3527	30062
LICA	1094RR	28.9	23.5*	7.90*	42.9	82.5*	59.5	0.77	3623	30267
LICA	1056S	29.1	23.6*	7.75	44.2	79.0	51.0	0.72	3264	26928
Asgrow	RX655RR2	29.2	24.3*	7.80	41.5	80.5	52.5	0.74	3366	28597
Pioneer	33D13	29.4	25.7*	7.50	44.9*	80.5	57.0	0.74	3492	31454
Asgrow	RX702RR2/YGCB	29.4	23.6*	8.20*	39.0	81.5	52.5	0.76	3393	27790
Dekalb	DKC5779	29.7	24.1*	7.30	39.1	82.0	54.5	0.77	3385	28500
LICA	UFO1056B	30.5	18.9	7.90*	43.5	87.0*	70.0*	0.78	4043*	32721
Mycogen	2T497	30.8	22.1	7.35	49.7*	78.5	56.5	0.71	3327	25702
TA Seeds	TA55700	34.0	23.1*	8.00*	47.1*	78.0	53.0	0.71	3226	24606
Mean		28.8	23.0	7.84	44.7	80.5	56.3	0.74	3438	27845
LSD (0.10)**		1.92	3.00	0.51	6.07	4.76	7.40	NS	404	NS

* - Hybrids that did not perform significantly lower than the highest hybrid in a particular column are indicated with an asterisk.

** - See text for further explanation.

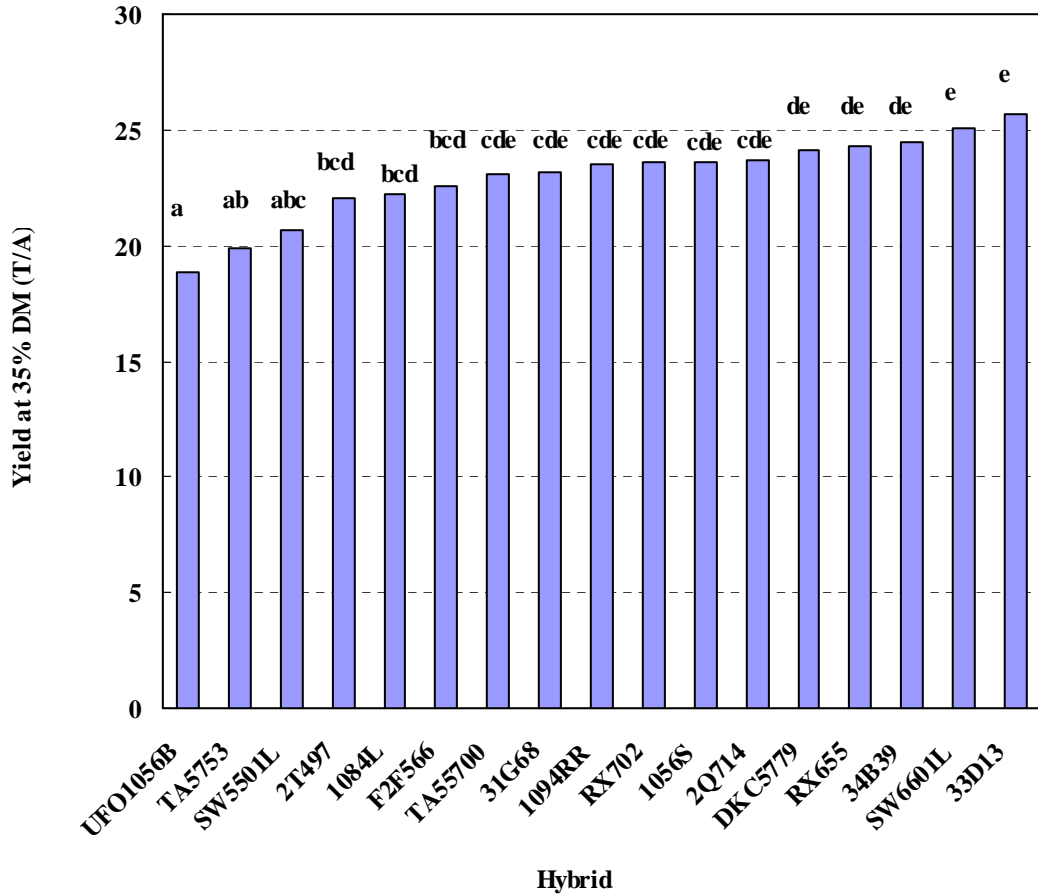
NS - None of the hybrids were significantly different from one another.

Sheldon - Relationship between Milk per ton and Milk per acre



Dotted lines represent the mean milk per ton and milk per acre at the Sheldon location.

Sheldon - Late Maturity Corn Hybrid Yields

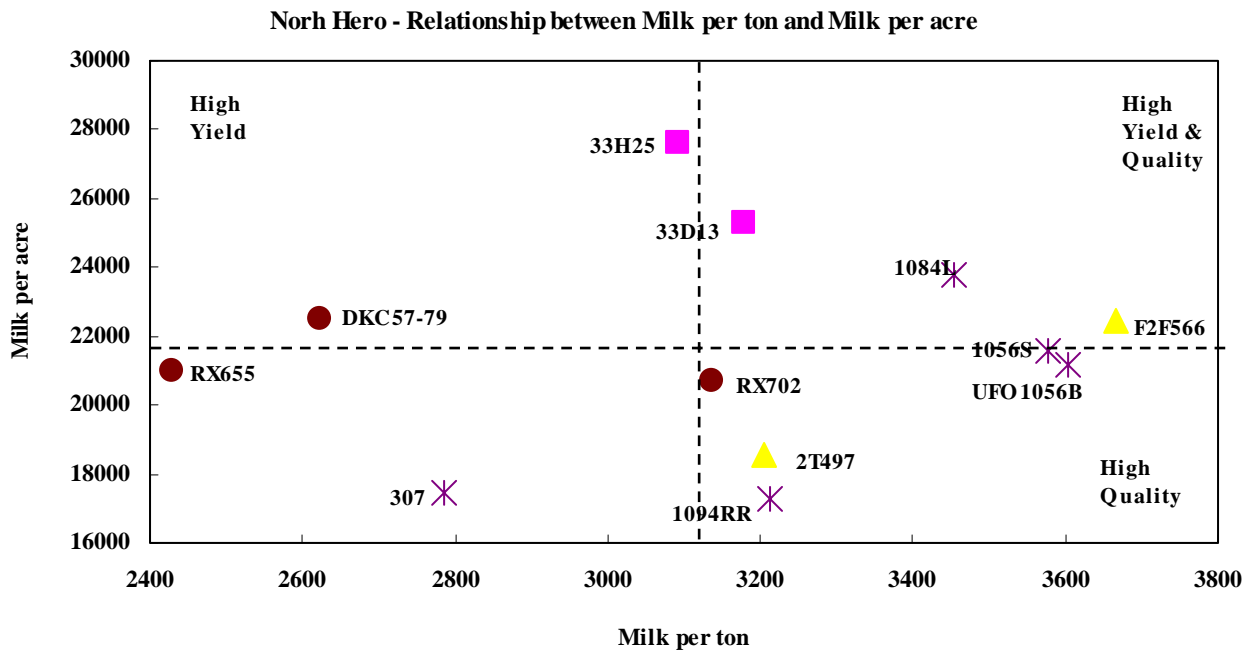


Hybrids with the same letter did not differ in yield at the Sheldon location.

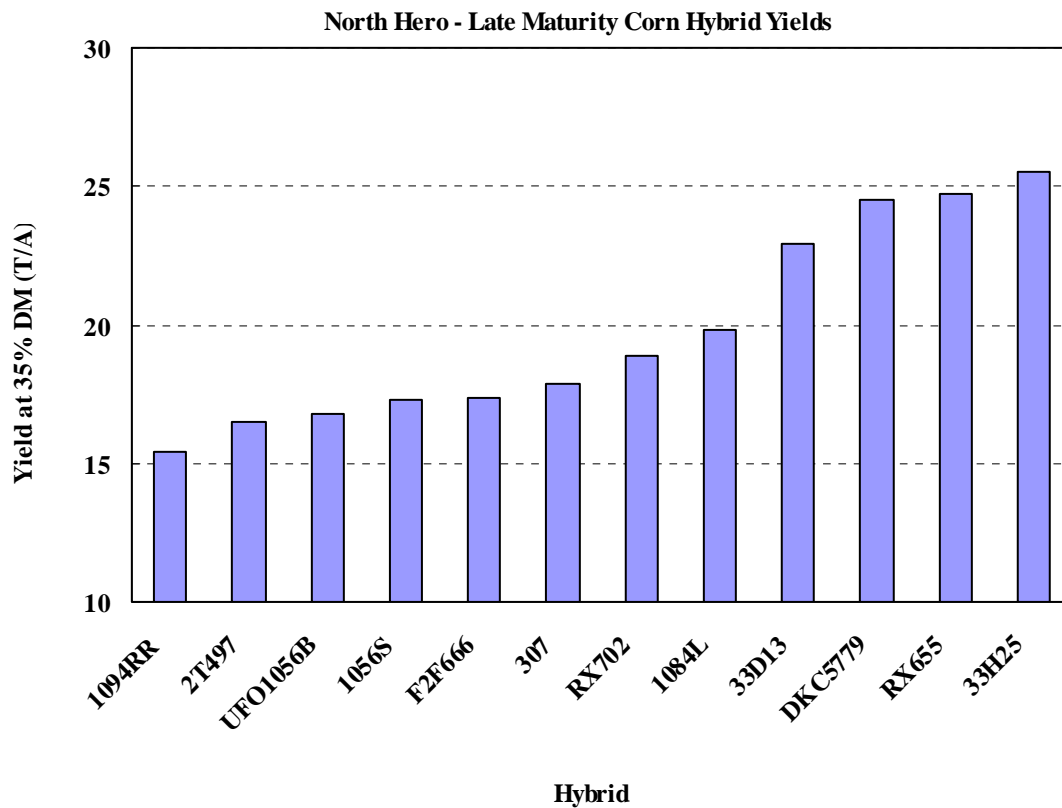
Table 6. North Hero – Late Maturity Silage Trial

Company	Hybrid	DM at harvest	Yield 35 % DM T/A	Forage Quality Characteristics					Milk per	
				CP	NDF	IVD	dNDF	Nel	ton	acre
				%	%	%	%	%		
Mycogen	F2F666	35.6	17.4	8.20	41.6	83.5	61.5	0.78	3665	22427
LICA	1084L	36.4	19.8	7.90	42.4	82.0	57.5	0.76	3455	23778
LICA	1056S	36.8	17.3	7.80	42.1	83.5	61.0	0.77	3577	21597
LICA	UFO1056B	37.1	16.8	7.90	37.7	87.0	65.0	0.81	3603	21174
Asgrow	RX702RR2/YGCB	37.2	18.9	7.55	40.4	80.0	51.5	0.75	3138	20728
LICA	1094RR	37.6	15.4	8.00	35.9	84.5	56.0	0.80	3212	17284
Pioneer	33D13	37.8	22.9	7.40	37.8	83.0	54.5	0.78	3178	25302
Pioneer	33H25	39.2	25.5	7.60	35.4	85.0	56.0	0.80	3093	27609
Mycogen	2T497	39.8	16.5	7.70	41.2	81.0	54.0	0.75	3205	18535
LICA	307	40.0	17.9	7.70	36.2	81.0	47.0	0.75	2786	17449
Dekalb	DKC5779	43.2	24.5	7.70	34.2	82.0	48.0	0.78	2623	22503
Asgrow	RX655RR2	45.8	24.7	7.70	31.3	83.0	47.0	0.79	2428	20975
Mean		38.9	19.8	7.76	38.0	83.0	54.9	0.78	3164	21613
LSD (0.10)		NA	NA	NA	NA	NA	NA	NA	NA	NA

NA – statistics were not calculated due to missing data.



Dotted lines represent the mean milk per ton and milk per acre at the North Hero location.



Yield statistics were not calculated at this location due to missing data.

UVM Extension would like to thank the Brouillette, Quintin, and Pouliot families for their generous help with the trials and Roger and Natasha Rainville for assisting with planting and harvesting.

