2012 Short Season
Corn Silage Variety Trial

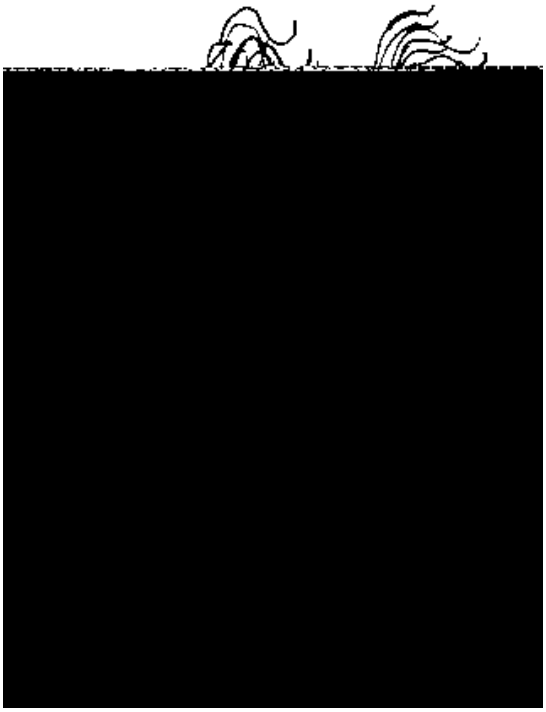

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Table 2. 2012 short season corn trial specifics for Alburgh, VT.

	Borderview Farm Alburgh, VT
Soil type	Rocky silt loam
Previous crop	Sunflower
Row width (in.)	30
Planting date	21-May
Harvest date	7-Sep & 11-Sep
Tillage operations	Spring disk, spike tooth harrow
Starter fertilizer	200 lbs ac^{-1} 10-20-20
Sidedress	200 lbs ac^{-1} Urea

Silage quality was analyzed using wet chemistry at Cumberland Valley Analytical Services in Hagerstown, MD. Plot samples were sent to the lab where they were analyzed for crude protein (CP), starch, acid detergent fiber (ADF), neutral detergent fiber (NDF), and 30-hour 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 nitrogen 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 (dNDF). Evaluation of forages and other feedstuffs for dNDF 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 dNDF. Forages with increased dNDF will result in higher energy values and, perhaps more importantly, increased forage intakes. Forage dNDF can range from 20 ±80% NDF.

Net energy of lactation (NEL) is calculated based on concentrations of NDF and ADF. NEL can be used as a tool to determine the quality of a ration, but should not be considered the sole indicator of the quality of a feed, as NEL is affected by WKH TXDQWLW\ RI D FRZ¶V GU\ PDWWHU LQWDN consumed, the contents of the ration, feeding practices, the level of her production, and many other factors. Most labs calculate NEL at an intake of three times maintenance. Starch can also have an effect on NEL, where the greater the starch content, the higher the NEL (measured in Mcal per pound of silage), up to a certain point. High grain corn silage can have average starch values exceeding 40%, although levels greater than 30% are not considered to affect energy content, and might in fact have a negative impact on digestion. Starch levels vary from field to field, depending on growing conditions and variety.

The silage performance indices of milk per acre and milk per ton were calculated using a model derived IURP WKH VSUHDGVKHHW 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.

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 hybrids were treated as fixed. Hybrid mean comparisons were made using the Least Significant Difference (LSD) procedure when the F-test was considered significant ($p<0.10$).

2R157	83	56.5	19.3
2G192	83	55.1	18.6
P9519HR	95	54.6	18.6
P8581R	85	59.8	18.3
DKC37-38	87	61.7*	18.0
1994RR	80	53.5	17.3
2R081	80	56.8	17.3
DKC33-7	83	57.8	16.8
DKC33-53	83	63.5*	16.3
	LSD (0.10)	4.5	NS
	Trial Mean	58.5	21.6

TMF94	94	7.9	26.7	46.0	63.3	29.7	0.75	3080	21300
2R157	83	7.8	29.3	50.0	51.6	28.0	0.71	2510	17000
P9519HR	95	7.4	24.3	40.8	54.1	36.4	0.76	2890	18900
2G192	83	8.1	**22.7**	**39.2**	55.0	**39.5**	**0.77**	2850	18600
P8581R	85	8.0	25.3	44.4	**68.0**	29.5	0.76	**3270**	21000
DKC37-38	87	8.0	26.0	44.3	54.2	34.1	0.74	2700	17100
2R081	80	8.8*	25.9	45.1	53.2	31.6	0.73	2650	16200
1994RR	80	8.2	24.0	41.7	54.7	36.4	0.75	2760	16700
DKC33-7	83	7.8	25.0	43.4	53.1	35.5	0.75	2700	15900
DKC33-53	83	7.9	29.8	50.4	50.5	26.9	0.71	2480	14000
	LSD (0.10)	1.1	NS	NS	NS	NS	NS	NS	NS
	Trial mean	7.9	25.9	44.4	55.8	32.4	0.74	2822	21400

Treatments indicated in bold had the top observed performance.
NS ±

±

DISCUSSION

All varieties reached proper maturity for harvest at Borderview Research Farm in Alburgh, VT. There was no severe lodging of corn stalks like there had been in previous years. Overall, the short season corn yielded an average of 21.6 tons per acre. The range of yields was between 16.3 and 27.4 tons per acre, showing the importance of proper varietal selection to maximize short season corn yields.

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