Silage Corn Variety Trial in Greenlee County, 1995.

Lee J. Clark

Abstract

Five yellow corn hybrids were compared for silage yield at the Lunt dairy in Greenlee county. Silage yields, several agronomic variables and nutritional variables are also reported. Funks G4673B was the highest yielding hybrid in the trial with a silage yield over 33 tons per acre and net energy of lactation value over 13,000 megacalories per acre.

Introduction

With the dairy being a very important part of agriculture in Greenlee county, it is important to occasionally evaluate silage corn hybrids in the area. The last silage variety trial was conducted in 1993, the highest yielding variety from that trial has not been widely accepted, so it is being tested again in this trial against the most popular varieties being grown.

Materials and Methods

Five corn hybrids with a maturity range from 115 to 120 days were selected to be tested this year. The seeds of these cultivars were planted into moist soil using a John Deere 4-row plateless planter at a seeding rate of 31,000 seeds per acre. The Lunt Dairy was the cooperator on this project and their cultural practices were used for all plots. A crop history of the plots follows:

Crop History:

Previous crop: Alfalfa
Planting dates: 30 May 1995
Fertilizer: Preplant 200 lbs/ac Urea and 200 lbs/ac 11-52-0
Herbicides: None
Insecticide: 5 lbs/ac Counter with the seed
Harvest dates: 11 September (ca. 2647 HU (86/50°F)) estimated from Safford data using data from Brown (1).

The corn hybrids were planted in 3-row plots to coincide with the size of the forage chopper and planted in two replicates. Replicates were weighed separately along with measurements on the agronomic variables. Ten-wheeled trucks used to catch the chopped corn from the plots were weighed at a nearby scale and taken to the pit where they were dumped and samples removed for analyses. Samples were maintained cool until delivered to the laboratory.

Results and Discussion

Yields, agronomic values and nutritional and energy values are shown in Table 1. Funks G4673B was the highest yielding cultivar in this trial, as was the case in 1993 (2). In 1995, however, the yields and the plant populations were considerably higher. A correlation between yield and plant population was previously noted in the 1988 study (3).

Funks G4673B produced the most silage per acre, the highest Total Digestible Nutrients (TDN) and the most Net

Energy of Lactation (NEL) per acre. The formula used to calculate TDN and NEL are listed under Table 1 and were provided by Kieth Hansen, the person responsible for animal nutrition at the Lunt dairy. One variety, the Warner experimental - W459002, produced more energy per pound than the other varieties, but it's yield was the lowest of those tested. It was also the earliest maturing variety as evidenced by the low percent moisture.

Several differences are seen between varieties in the area of standability and plant health. Both the Funks and Pioneer varieties had good marks on ear production, smut and lodging resistance. The Northrup King variety was the tallest and the Pioneer variety the shortest but height didn't seem to be directly correlated to yield. The plant populations variety a bit from one variety to the next, but it isn't felt that they greatly affected yield.

Table 2 contains the results of analysis from the laboratory along with the extension of crude protein and fiber per acre.

References

1. Brown, P.W. 1991. Normal values of heat unit accumulation for southern Arizona. Extension Report 190041, College of Agriculture, The University of Arizona, Tucson, AZ.

2. Clark, L.J. 1994. Corn Silage Variety Trial in Greenlee County, 1993. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson. Series P-98, pp. 93-96.

3. Clark, L.J. and E. DeRosa. 1989. Corn silage variety trial in Greenlee County, 1988. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson. Series P-79, pp. 26-29.

Table 1. Silage yields, nutritional and energy values and other agronomic values by variety of corn on the Lunt Dairy in Duncan, 1993.

VARIETY	Yield 70%M (T/A)	Pl/ac	% Barren	% Smut	% Lodged	Ear Ht (in)	Plant Ht (ft)	% Moisture	TDN	Net Energy per dry lb	Net Energy Mcal/ac
Funks G4673B	33.2	35393	0.0	0.0	0.0	68.5	11.2	72.5	65.9	0.663	13218
W 6729	31.6	36300	-0.3	0.0	2.5	62.0	12.0	72.0	63.9	0.585	11090
Pioneer 3183	31.5	38115	0.0	0.0	0.0	62.0	10.7	71.3	65.5	0.648	12236
NK N9119	30.5	29494	4.6	4.6	1.5	56.5	12.6	73.0	62.7	0.540	9899
W 459002	28.3	35393	1.4	1.3	1.3	64.5	11.0	68.3	66.2	0.674	11439
Average	31	34939	1.1	1.2	1.1	62.7	11.5	71.4	64.8	0.600	11576
Std Dev	1.6	2898.3	2.0	1.8	1.0	3.9	0.7	1.6	1.3	0.100	1113.5

Net Energy of Lactation = 1.50 - (%ADF * 0.0267) [Mcal per lb of dry matter]

TDN = 87.84 - (%ADF * 0.70)

Table 2. Laboratory results of dry corn samples from silage variety trials on Lunt Dairy in Duncan, 1995.

VARIETY	% Crude Protein	% Crude Fiber	Crude Protein per ac	Crude Fiber per ac	% Ash	% NDF	% ADF
Funks G4673B	7.75	24.76	1544.1	4933.7	5.90	49.30	31.30
W 6729	8.87	27.07	1679.9	5129.2	6.70	54.60	34.30
Pioneer 3183	7.49	25.21	1413.7	4758.9	5.90	54.60	31.90
NK N9119	7.70	28.39	1410.6	5201.2	6.70	59.30	35.90
W 459002	8.29	24.43	1405.6	4144.4	7.00	50.30	30.90
Average	8.00	26.00	1490.8	4833.5	6.5	53.6	32.9
Std Dev	0.5	1.5	107.9	377.7	0.4	3.6	1.9