



## **Material and Methods**

A complete randomized block design experiment with sixteen silage corn varieties (Table 1) and six replications was conducted at the Maricopa Ag Center. These varieties were provided by several seed distributor companies. Silage corn was planted in a single row on 40-inch beds on March 25, 2010. Each plot was four beds in width and 40 feet in length. The planting rate was 32,670 seeds/A for each variety.

During the growing season, a total of 25 inches of water was applied to the crop. UAN32 fertilizer was applied in the irrigation water on April 22 and May 14 at a rate of 48 lbs N/A and 57 lbs N/A, respectively. Immediately after planting, Stealth was applied at 3 pints/A for weed control. Baythroid XL was applied twice at a rate of 2.8 ounces/A on May 11 and May 21 and Oberon 2SC at 8.3 ounces/A on June 21, 2010 for insect control.

The crop was harvested on July 27 and 28 when average whole plant moisture ranged from 57% to 67% and kernel milk line was between one-half and two-thirds for most varieties. Five plants were randomly chosen from each plot to measure plant and ear height before harvest. Only the two middle rows were chopped with a Hesston 7155 chopper and silage yield weighed. Silage yield was adjusted to a standard of 72% moisture. Samples from 4 replications were taken for silage quality analysis. Percent moisture, crude protein, ADF, and NDF from each sample were analyzed.

## **Results and Discussion**

Among the sixteen varieties in this trial, silage yield ranged from 20.1 to 28.2 tons/A with a 125-day growing period (from March 25 to July 28). The five highest-yielding varieties were RX940RR-2, TMF2L844, DKC67-88, 28V71, and 216-24T. Variety RX940RR-2 produced the highest silage yield with an average of 28.2 ton/A (Table 2).

There were significant variations in crude protein among varieties, ranging from 5.5% to 7.45%. The five varieties with highest crude protein content are 28V71, X-6022GTCB, 818VT3, 28V81, and 7373RB. Among varieties, the correlation between silage yield and crude protein content was not significant.

Typically it is recommended that 250 lbs N/A be made available to a 25 tons/A crop (Dahnke et al., 1992). In this project, only 105 lbs N/A N fertilizer was applied and no measurements were made of the plant N status during the growing season. Manure was applied to the field at a rate of 15 tons/A in 2008 and the field was fallow in 2009. Low N application in this study might reduce silage yield and protein content.

In addition to crude protein content, ADF and NDF are also important factors in determining silage quality. The top five varieties with lowest NDF and ADF were 28V71, 216-24T, DKC67-88, 8505VT3, and 28V81. The difference in plant height and ear height was small among the sixteen varieties. It was suggested that silage yield is positively correlated with plant height or ear height. However, no significant correlations between silage yield and plant height or ear height were found in this study.

In Figure 1, the vertical and horizontal lines represent the average yield and average crude protein content of the sixteen varieties, respectively. The yield and crude protein of the sixteen varieties are separated into four groups: low yield and high protein, low yield and low protein, high yield and high protein, and high yield and low protein (Fig. 1). The high yield and high protein group includes varieties with both yield and protein higher than the average: 28V71, DKC67-88, 218-28R, 818VT3, and 7101B.

The vertical and horizontal lines in Figure 2 represent the average yield and average NDF content of the sixteen varieties, respectively. In the four groups, the varieties with high yield and low NDF (favorable characteristics) included 28V71, DKC67-88, 216-24T, and 818VT3. Therefore, varieties with favorable traits (high yield, high crude protein, and low NDF/ADF) among the sixteen varieties were 28V71, DKC67-88, and 818VT3.

## **Conclusions**

Variety RX940RR-2 produced the highest silage yield with an average of 28.2 ton/A and the variety 28V71 had the highest crude protein content (7.45%) among the sixteen silage corn varieties. Varieties that produced higher yield, higher crude protein, and lower NDF than the average of the sixteen varieties were 28V71, DKC67-88, and 818VT3. Variety trials might need to be conducted at multiple locations in multiple years to provide growers with firm conclusions.

## References

USDA-NASS. 2009. 2008 Arizona Agricultural Statistics.

Dahnke, W.C., C. Fanning, and A. Cattanach. 1992. Fertilizing Corn Grain, Popcorn, Silage Corn, and Sweet Corn. <http://www.ag.ndsu.edu/pubs/plantsci/soilfert/sf722w.htm>

Table 1. Silage corn varieties included in the trial and the sources

Variety Name	Company	Relative Maturity (days)
218-28R	Channel (NC+) <sup>1</sup>	118
216-24T	Channel (NC+)	116
7373RB	Channel (NC+)	116
7101B	Channel (NC+)	116
7250R	Channel (NC+)	119
9009RH	CropLan Genetics <sup>2</sup>	125
8505VT3	CropLan Genetics	117
818VT3	CropLan Genetics	118
28V81	Golden Acres Genetics <sup>3</sup>	118
28V71	Golden Acres Genetics	118
X-6022GTCB	Golden Acres Genetics	117
26T50M	Grand Valley <sup>4</sup>	120
DKC67-88	DeKalb <sup>5</sup>	117
RX940RR-2	DeKalb	121
TMF2L844	Mycogen <sup>6</sup>	119
N82V-GT	NK Seeds (Syngenta) <sup>7</sup>	117

More information about these varieties is available from the following websites:

<sup>1</sup> [http://www.channelbio.com/UserFiles/file/2010\\_Corn\\_Section\\_of\\_the\\_Channel\\_Seed\\_Guide.pdf](http://www.channelbio.com/UserFiles/file/2010_Corn_Section_of_the_Channel_Seed_Guide.pdf)

<sup>2</sup> <http://www.croplangenetics.com/FINDSEED/CORN/FILTER/default.aspx>

<sup>3</sup> <http://www.gaseed.com/index.php/products/test-sub-menu>

<sup>4</sup> <http://grandvalleyhybrids.com/Site/SILAGE-692.html>

<sup>5</sup> <https://www.asgrowanddekalb.com/products/Pages/seedresourceguide.aspx?Method=results>

<sup>6</sup> <http://www.dowagro.com/mycogen/silage/silagetmf.htm>

<sup>7</sup> <http://www.syngenta.com/COUNTRY/US/EN/SEEDS/BRANDS/NK/Pages/home.aspx>

Table 2. Yield and quality of 16 silage corn varieties

Variety	yield * (ton/A)	Crude protein (%) **	NDF (%)	ADF (%)	Plant height (inch)	Ear height (inch)
RX940RR-2	28.24 a	5.86 bc	52.3 ab	31.3 ab	103.0 ab	60.0 a
TMF2L844	27.01 ab	6.05 bc	51.2 abc	33.2 a	101.8 ab	61.2 a
DKC67-88	25.10 abc	6.49 b	44.8 cde	26.7 cd	100.5 b	59.0 a
28V71	24.93 abc	7.42 a	43.1 e	24.8 d	103.8 ab	64.1 a
216-24T	24.22 abc	6.20 bc	43.9 de	26.9 cd	104.7 ab	62.8 a
218-28R	24.06 abc	6.31 bc	50.2 abcd	30.3 abc	103.3 ab	63.9 a
7101B	23.67 abc	6.49 b	54.2 a	31.5 ab	102.6 ab	58.6 a
818VT3	23.61 abc	6.56 b	47.6 abcde	28.7 bcd	103.9 ab	64.7 a
9009RH	23.48 abc	5.49 c	50.3 abcd	30.9 abc	103.2 ab	62.4 a
26T50M	22.77 abc	5.74 bc	51.1 abc	32.4 ab	103.3 ab	59.5 a
8505VT3	22.71 bc	6.24 bc	46.1 bcde	28.4 bcd	104.6 ab	63.3 a
28V81	22.66 bc	6.52 b	46.8 bcde	28.8 abcd	104.0 ab	63.3 a
7373RB	21.42 c	6.51 b	46.8 bcde	29.4 abc	104.2 ab	64.9 a
7250R	20.49 c	5.65 c	50.3 abcd	29.8 abc	105.1 ab	60.5 a
N82V-GT	20.46 c	6.29 bc	47.3 bcde	28.2 bcd	106.3 a	64.1 a
X-6022GTCB	20.14 c	6.57 b	47.0 bcde	28.8 bcd	101.1 ab	61.4 a

\* Crop yield was adjusted to 72% moisture.

\*\* All percentages in the table are on a dry matter basis.

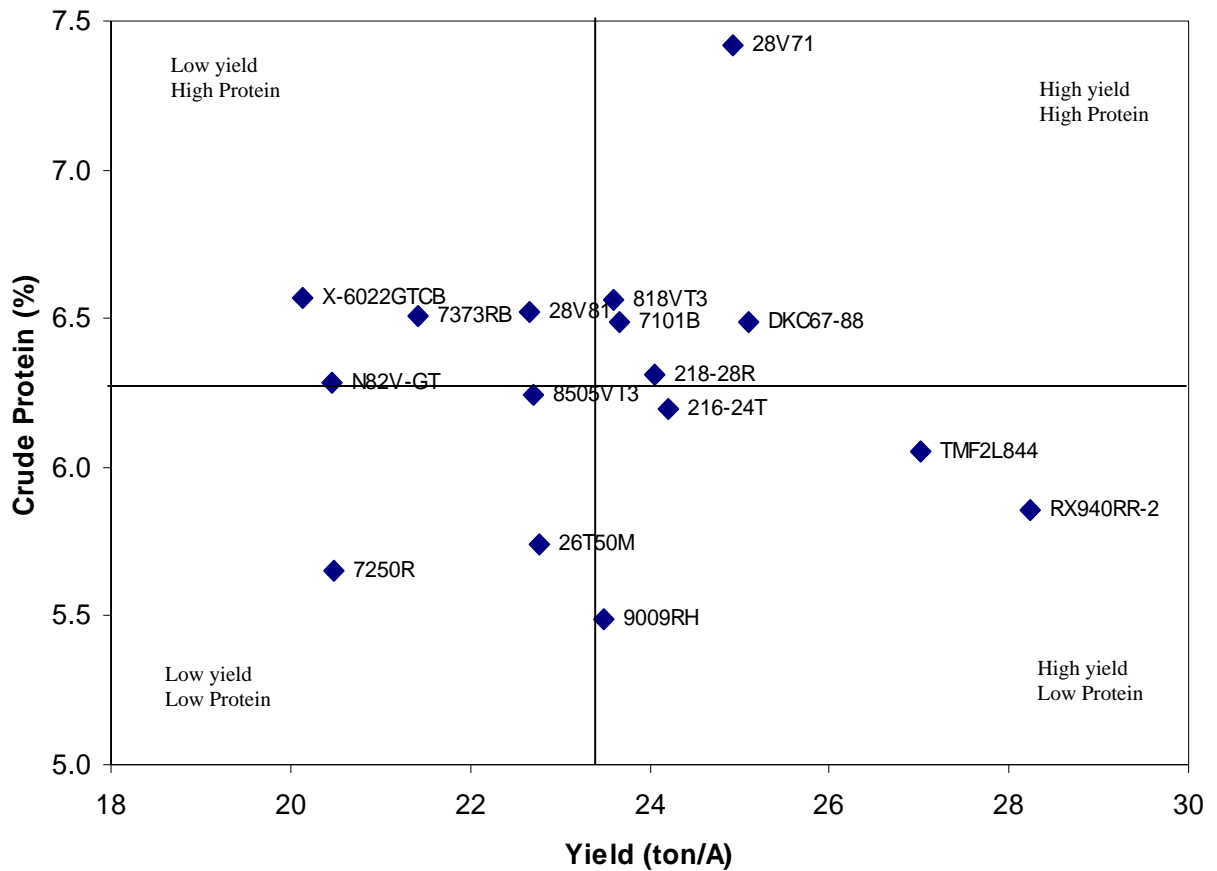


Figure 1. Yield and crude protein content of the sixteen corn silage varieties. The vertical and horizontal lines represent the average yield and average crude protein content of the sixteen varieties, respectively.

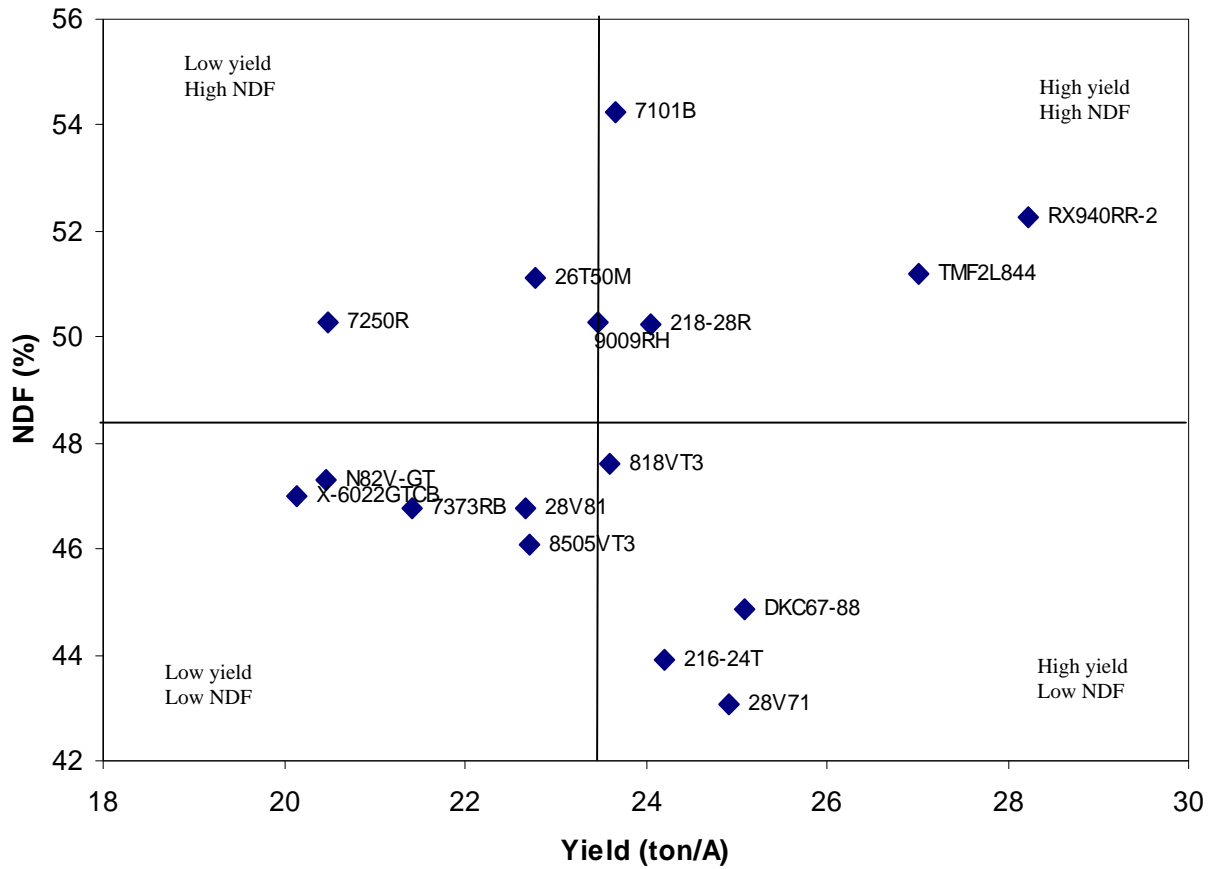


Figure 2. Silage yield and NDF of the sixteen silage corn varieties. The vertical and horizontal lines represent the average yield and average NDF content of the sixteen varieties, respectively.