

## 2012 Tulare/Fresno County Silage Corn Variety Trial

Shannon Mueller, Farm Advisor from the Fresno County Cooperative Extension office, and I teamed up for the annual silage corn variety trial in 2012. The location was at Milky Way Dairy, the same as last year but in a different field. The soil was a fine sandy loam. The preceding crop was winter forage. After harvest, manure was spread, the field disked, furrowed out, and pre-irrigated.

Each plot was five 30-inch rows wide and slightly over a quarter mile in length. There were 3 replications. Thirteen varieties were planted to moisture on June 19. Pounce, 6 lb/A, was applied at planting. Stand counts, 20 locations within each plot, were taken 14 days after planting. Average populations were very uniform, ranging from a low of 32,817 to a high of 33,933 plants per acre (Table 1).

Crop development proceeded normally. Roundup Powermax (32 fl oz/A) was applied for Johnson grass on July 20 and Status was applied (2 oz/A) on July 22. Oberon (11 fl oz/A) was applied to control spider mites in the last half of July by ground. Tassels first emerged in early August with the major pollination period in mid-August. Plant and ear heights were taken in late September (Table 1) and harvest was on October 12. All five rows and the entire length of each plot were harvested for yield data.

Table 1. Plant population, tassel and silk ratings, and plant and ear heights, 2012 Tulare/Fresno Silage Corn Variety Trial, Milky Way Dairy, Visalia, CA.

| Brand                        | 3-Jul            | 16-Aug                                |                                   | 30-Aug                            | 24-Sep               |                    |
|------------------------------|------------------|---------------------------------------|-----------------------------------|-----------------------------------|----------------------|--------------------|
|                              | Plant Population | Tassel Rating<br>1=none; 5=all<br>out | Silk Rating<br>0=none;<br>5=brown | Silk Rating<br>0=none;<br>5=brown | Plant Height<br>(ft) | Ear Height<br>(ft) |
| Croplan8621VT3/P             | 32,833           | 2.8 bcd                               | 2.8 ab                            | 4.1 cd                            | 11.5 cd              | 6.3 bc             |
| DK 67-88 (field Variety)     | 33,033           | 3.1 ab                                | 2.9 a                             | 4.9 a                             | 12.1 b               | 6.6 ab             |
| N82V311                      | 33,233           | 2.5 de                                | 2.3 c                             | 4.3 bc                            | 13.4 a               | 6.4 abc            |
| Integra 9682VT3              | 33,250           | 1.6 f                                 | 1.3 d                             | 3.8 de                            | 12.1 b               | 6.7 a              |
| NuTech 5X-716                | 33,333           | 3.1 ab                                | 2.8 ab                            | 4.9 a                             | 11.8 bc              | 6.2 cd             |
| DK 64-67                     | 33,517           | 2.6 cde                               | 3.0 a                             | 5.0 a                             | 10.4 f               | 5.6 f              |
| Dyna-Gro 57VP51              | 33,933           | 2.5 de                                | 3.0 a                             | 4.6 ab                            | 10.4 f               | 5.1 g              |
| BH 8860GT                    | 33,467           | 3.0 ab                                | 2.4 bc                            | 4.3 bc                            | 12.0 b               | 5.9 def            |
| Baglietto 5530RR             | 32,817           | 2.9 abc                               | 2.8 ab                            | 4.7 a                             | 11.0 e               | 5.7 f              |
| ES 7615VT2P                  | 33,883           | 3.0 abc                               | 2.0 c                             | 3.5 e                             | 11.8 bc              | 6.1 cde            |
| TMF2L871                     | 33,450           | 2.2 e                                 | 1.3 d                             | 4.0 cd                            | 11.1 de              | 5.9 def            |
| MC 6583                      | 33,317           | 3.0 abc                               | 3.0 a                             | 3.9 cd                            | 10.8 ef              | 5.7 f              |
| TG8574GTCBII                 | 33,867           | 3.3 a                                 | 3.0 a                             | 4.1 cd                            | 11.0 e               | 5.8 ef             |
| Grand Mean                   | 2.14             | 2.75                                  | 2.50                              | 4.30                              | 11.50                | 5.99               |
| Probability                  | 33379            | 0.000                                 | 0.00                              | 0.00                              | 0.000                | 0.000              |
| LSD (0.05)                   | 0.65             | 0.35                                  | 0.44                              | 0.37                              | 0.458                | 0.365              |
| Coefficient of Variation (%) | NS               | 7.5                                   | 10.5                              | 5.1                               | 2.4                  | 3.6                |

Planted June 19, 2012, and harvested Oct 12, 2012. Values are means of three replications. Within a column means followed by a common letter do not differ significantly at the 5% level of probability (Duncan's Multiple Range).

As the plots were chopped, each was subjectively rated for lodging on a 0 to 5 scale (Table 2). A score of 0 meant no plants had fallen and a score of 5 indicated that 85% or more of the plot had

lodged. None of the plots had a score of 5 but TG8574GTCBII had significant lodging in all reps with an average rating of 4.

Samples for moisture and quality were collected from each plot at the silage pile by taking several small handfuls from different areas of the just-dumped pile of chopped corn. Moisture samples were put in zip lock bags. These samples were weighed and put into a drying oven the same day. Samples for quality were vacuumed sealed at the silage pile and sent to Cumberland Valley Lab for quality analysis. Dry matter and moisture data reported in Table 2 are an average from the drying oven and the laboratory results.

Table 2. Yield data, 2012 Tulare/Fresno Silage Corn Variety Trial, Milky Way Dairy, Visalia, CA.

| Brand                    | Lodging Score<br>0=none;<br>1=minimal;<br>3=many areas<br>5 =>85%<br>lodged | Tons/A<br>as harvested | Average %<br>Dry Matter | %<br>Moisture<br>@ Harvest<br>(100-DM) | Tons/Acre<br>Dry Matter | Tons/Acre<br>adjusted to 70%<br>Moisture |
|--------------------------|---|------------------------|-------------------------|--|-------------------------|--|
| Croplan 8621VT3/P        | 0.1 c   | 32.94 a                | 32.84 cd                | 67.16                                  | 10.82 a                 | 36.06 a                                  |
| DK 67-88 (field Variety) | 0.0 d   | 31.38 ab               | 34.08 c                 | 65.92                                  | 10.69 ab                | 35.65 ab                                 |
| N82V311                  | 1.1 bcd   | 33.18 a                | 32.28 cd                | 67.72                                  | 10.69 ab                | 35.64 ab                                 |
| Integra 9682VT3          | 0.6 bcd   | 34.54 a                | 30.27 de                | 69.73                                  | 10.44 abc               | 34.81 abc                                |
| NuTech 5X-716            | 0.3 cd  | 33.47 a                | 30.20 de                | 69.80                                  | 10.11 abcd              | 33.69 abcd                               |
| DK 64-67                 | 1.3 bcd   | 26.45 bc               | 37.88 b                 | 62.12                                  | 10.02 abcd              | 33.39 abcd                               |
| Dyna-Gro 57VP51          | 0.0 d   | 29.59 abc              | 32.26 cd                | 67.74                                  | 9.56 abcde              | 31.87 abcde                              |
| BH 8860GT                | 0.6 bcd   | 31.42 ab               | 30.29 de                | 69.71                                  | 9.53 abcde              | 31.75 abcde                              |
| Baglietto 5530RR         | 1.9 bc  | 27.71 bc               | 32.85 cd                | 67.15                                  | 9.10 bcde               | 30.33 bcde                               |
| ES 7615VT2P              | 1.9 bc  | 26.84 bc               | 33.70 c                 | 66.30                                  | 8.87 cde                | 29.57 cde                                |
| TMF2L871                 | 1.4 bcd   | 31.01 abc              | 28.07 e                 | 71.93                                  | 8.73 de                 | 29.11 de                                 |
| MC 6583                  | 2.1 b   | 26.21 c                | 31.62 cd                | 68.38                                  | 8.28 ef                 | 27.61 ef                                 |
| TG8574GTCBII             | 4.0 a   | 15.89 d                | 43.46 a                 | 56.54                                  | 6.84 f                  | 22.81 f                                  |
| Grand Mean               | 1.18  | 29.28                  | 33.06                   |  | 9.51                    | 31.72                                    |
| Probability              | 0.000   | 0.000                  | 0.000                   |  | 0.000                   | 0.000                                    |
| LSD (.05)                | 1.401   | 4.482                  | 2.802                   |  | 1.458                   | 4.852                                    |
| CV%                      | 70.34   | 9.06                   | 5.03                    |  | 9.07                    | 9.060                                    |

Planted June 19, 2012, and harvested Oct 12, 2012. Values are means of three replications. Within a column means followed by a common letter do not differ significantly at the 5% level of probability (Duncan's Multiple Range).

In Table 2, yield data are presented as tons per acre as weighed at the dairy, as dry matter per acre, and as tons per acre after adjusting to a standard of 70% moisture. It is difficult to directly compare yield and quality when there is a wide range of maturity at harvest. In this trial, moisture ranged from 56.5 % to almost 72% at harvest. TG8574GTCBII was the driest (which may be part of the reason that it lodged as much as it did). Simply adjusting all the yields to 70% moisture by an equation does not solve the problem of comparing varieties because it favors varieties that are drier on the harvest date. This is because a drier variety has all of the advantage of having developed more starch in the kernels because it is more mature and then, with the adjustment calculation, moisture weight is added to get to 70% moisture. Wetter, less mature corn is at a disadvantage because it didn't get to fill the kernel as much as more mature corn and moisture weight is subtracted to get to 70%. In this year's trial, only one variety averaged more than 70% moisture but the adjustment calculation still favors drier varieties over the less dry varieties.

The top 8 yielding varieties in Table 2 all have an “a” next to their yield when presented as dry matter per acre. This means that there is a 95% probability that those varieties are not different from each other. When using results like this one to select varieties to plant, it is important to consider not only the relative maturity at harvest for the different varieties but also the group of top yielding varieties and not just the one variety at the top of the list.

Other considerations when selecting a variety may be the feed quality of the corn as it goes into the silage pile. High quality going into the silage pile doesn’t guarantee it will be high quality after ensilage but, if it is not high quality going in, it definitely won’t be high quality coming out. Quality data for this trial is listed in Table 3. Each nutritionist seems to have his or her own for what makes the best forage so you may want to confer with your nutritionist when selecting varieties to plant.

Table 3. Quality data, 2012 Tulare/Fresno Silage Corn Variety Trial, Milky Way Dairy, Visalia, CA.

| Brand                          | Crude Protein<br>(% DM) | ADF<br>(% DM) | NDF<br>(% DM) | Lignin<br>(% DM) | 30-hr<br>Digestibility<br>(% NDF) | Sugar<br>(% DM) | Starch (%<br>DM) |
|--------------------------------|-------------------------|---------------|---------------|------------------|-----------------------------------|-----------------|------------------|
| Croplan8621VT3/P               | 7.1 cde                 | 25.2 b        | 37.0 e        | 3.25 bc          | 51.1 cd                           | 1.77 a          | 32.9             |
| DK 67-88 (field Variety)       | 7.3 bc                  | 27.1 ab       | 41.4 abcde    | 3.52 ab          | 52.3 bc                           | 1.37 ab         | 30.8             |
| N82V311                        | 7.7 a                   | 25.5 b        | 38.8 cde      | 3.12 c           | 55.0 ab                           | 1.73 ab         | 32.0             |
| Integra 9682VT3                | 7.3 bc                  | 28.4 ab       | 42.4 abc      | 3.53 ab          | 53.3 abc                          | 1.37 ab         | 29.0             |
| NuTech 5X-716                  | 7.5 ab                  | 25.2 b        | 37.5 de       | 3.31 bc          | 52.4 bc                           | 1.37 ab         | 33.7             |
| DK 64-67                       | 7.3 bcd                 | 27.4 ab       | 40.1 bcde     | 3.66 a           | 50.8 cd                           | 1.37 ab         | 31.1             |
| Dyna-Gro 57VP51                | 7.6 ab                  | 26.9 ab       | 40.9 bcde     | 3.55 ab          | 49.0 d                            | 1.60 ab         | 30.0             |
| BH 8860GT                      | 7.0 de                  | 29.9 a        | 44.0 ab       | 3.67 a           | 50.5 cd                           | 1.53 ab         | 27.3             |
| Baglietto 5530RR               | 7.7 a                   | 26.0 b        | 39.0 cde      | 3.40 abc         | 52.4 bc                           | 1.40 ab         | 32.2             |
| ES 7615VT2P                    | 7.5 ab                  | 27.5 ab       | 40.2 bcde     | 3.54 ab          | 50.3 cd                           | 1.60 ab         | 30.3             |
| TMF2L871                       | 7.5 ab                  | 26.0 ab       | 40.4 abcd     | 3.34 abc         | 51.8 cd                           | 1.76 a          | 28.9             |
| MC 6583                        | 6.9 e                   | 29.5 a        | 43.6 ab       | 3.72 a           | 51.0 cd                           | 1.30 bc         | 28.2             |
| TG8574GTCBII                   | 6.9 e                   | 29.4 a        | 45.3 a        | 3.60 ab          | 55.4 a                            | 0.93 c          | 28.5             |
| Grand Mean                     | 7.3                     | 27.3          | 40.9          | 3.48             | 51.9                              | 1.47            | 30.4             |
| Probability                    | 0.000                   | 0.016         | 0.004         | 0.013            | 0.003                             | 0.007           | 0.220            |
| LSD (.05)                      | 0.3                     | 2.8           | 3.9           | 0.31             | 2.78                              | 0.37            | NS               |
| Coefficient of Variability (%) | 2.3                     | 6.1           | 5.6           | 5.20             | 3.17                              | 15.02           | 9.41             |

Planted June 19, 2012, and harvested Oct 12, 2012. Values are means of three replications. Within a column means followed by a common letter do not differ significantly at the 5% level of probability (Duncan's Multiple Range). DM = dry matter; ADF = acid detergent fiber; NDF = neutral detergent fiber