Effect of Mixed Maturity Corn Planting on Yield

John Yost, Ohio State University Extension Educator, Fayette County

Introduction
Reduced kernels per ear is the most identifiable component of yield reduction under drought stress (Hall et al., 1982; Sadras et al., 1985; Undersander, 1987). When environmental conditions are below optimum, kernel number may be limited by asynchrony (pollen is not shed when silks are exposed or receptive) (Johnson and Herrero, 1981), reduced pollen viability (Schoper et al., 1986), loss of silk receptivity (silk is no longer functional to support pollen tube growth) (Bassetti and Westgate, 1993) or developmental failure of the ovary (Mitchell and Petolino, 1988). It was the purpose of this study to determine if planting corn hybrids of differing maturity versus single maturity planting can reduce yield loss attributed to asynchrony.

Background
Crop Year: 2009  
Location: Washington CH, OH  
County: Fayette County  
Drainage: Tiled, Well drained  
Previous Crop: Soybean  
Tillage: Conventional Tillage  
Planting Date: April 11, 2009  
Seeding Rate: 32,100 seeds/acre  
Hybrid: Multiple

Methods
This trial was conducted during the 2009 growing season at the Fayette County Demonstration Farm in Washington Court House, Ohio. Five hybrids, of three maturities, were planted at an initial population of 32,100 seeds per acre. Treatments were planted as single hybrid stands and as mixed maturity with alternating rows devoted to each hybrid. The treatments were replicated 4 times in eight row X 125’ plots. The treatments were:

1) 118 d SC11VTT79  
2) 118 d SC11VTT86  
3) 110 d SC11HQ09  
4) 110 d SC11AQ07  
5) 108 d SC11VTT87  
6) SC11VTT79 – SC11HQ09  
7) SC11VTT79 – SC11VTT87  
8) SC11HQ09 – SC11VTT87  
9) SC11VTT79 – SC11VTT86  
10) SC11HQ09 – SC11AQ07
All treatments were harvested using a Gleaner K combine and total plot weight was determined with a weigh wagon.

**Results**

![Figure 1: Treatment Yield Totals](chart1.png)

![Figure 2: Comparison of Single Hybrid Average to Hybrid Mix Average](chart2.png)

**Summary**

Environmental conditions during the 2009 growing season were optimal for high corn yields. Timely rains, and moderate temperatures, promoted pollination and late season grain fill. No visual evidence of aborted or unpollinated kernels was evident.

Statistical analysis was inconclusive for yield differences between treatments. One hybrid, SC11VTT86, produced significantly lower yields than the other hybrids, when planted in a single hybrid stand or in a mix planting (Figure 1). No significant difference was seen when comparing the yield of a mixed hybrid stand to the average of the two hybrids that were used in
the mixed planting (Figure 2). However, there was an observed tendency for the mixed hybrid treatments to out yield their single hybrid counterparts by an average of 4.2 bushel per acre.

References


For more information, contact:
John Yost
OSU Extension Fayette County
1415 U.S. Rte 22 SW, Suite 100
Washington Court House, Ohio  43160
yost.77@osu.edu