

Effect of Mixed Maturity Corn Planting on Yield

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

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

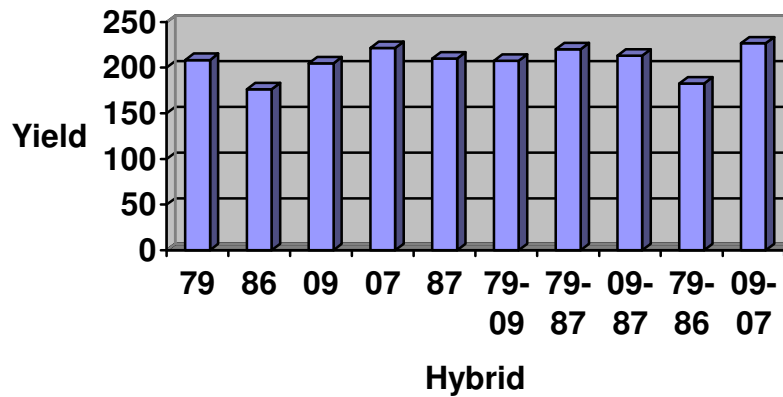
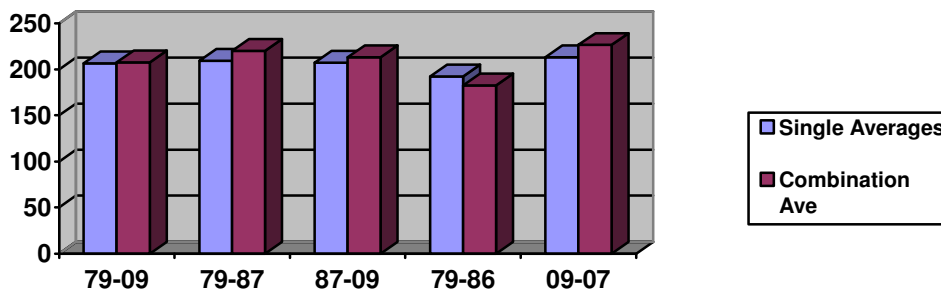


Figure 2: Comparison of Single Hybrid Average to Hybrid Mix Average



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

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