Study Guidelines

Previous studies conducted at the Monsanto Learning Center at Gothenburg, NE evaluated the effects of plant population on yield potential of different corn hybrids. In 2012, a study was set up to determine the population at which a specific corn hybrid has a negative trend in yield and if hybrids yield better in 30-inch rows or twin rows.

This study looked at three treatments: hybrid, plant population, and row spacing. Six corn hybrids with relative maturities (RM) ranging from 109 to 115 were planted in four-row plots on April 23. Plant populations were 24,000, 30,000, 36,000, and 42,000 plants per acre. Plots were planted in 30-inch rows or twin rows. Only the middle two rows of each four-row plot were harvested.

Weeds were managed with a preplant application of Degree Xtra® at 3.5 qts/acre, Roundup PowerMAX® at 28 oz/acre, and Sharpen® at 2 oz/acre applied on April 16. A postemergence herbicide application on June 11 consisted of Roundup PowerMAX® at 28 oz/acre and Callisto® at 3 oz/acre. No fungicide or insecticide applications were made. A total of 15 inches of water was applied through irrigation at 1-inch increments throughout the growing season. In addition, approximately 4 inches of rain fell during the growing season. Plots had previously been in a corn following corn rotation. Vertical tillage was performed on April 2.

EFFECT OF CORN DENSITY ON YIELD

Optimum plant population depends on variables such as moisture availability, soil fertility, and the specific hybrid planted. This trial was designed to demonstrate how different hybrids respond to plant population and row spacing.

Results

Yields in this study are 10-15% lower than expected due to a mistake in fertilizer application. When averaged together, the yield of all six hybrids was greater in 30-inch rows than in twin rows at plant populations of 30,000 plants/acre and greater (Figure 1). The average yield of the six hybrids was greater in twin rows at 24,000 plants/acre. Individual hybrids responded differently to population and row spacing.

Summary Comments

Based on average yield from the six hybrids, results from this study indicate that hybrids planted at lower populations in twin rows may perform better than when planted in 30-inch rows. In this limited study, hybrids planted at higher populations performed better in 30-inch rows than in twin rows. When looked at individually, each hybrid responded differently to population and row spacing.

The information discussed in this report is from a single site, non-replicated, one-year demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.