



# 2013 DEMONSTRATION REPORT

## Monsanto Learning Center at Monmouth, IL

# Drought and Nitrogen Timing Effects in Corn

## Background

Efficient use of nitrogen (N) fertilizer for corn production is important for maximizing economic return and yield potential. The availability of N can be highly variable and is influenced by many factors, one of the biggest factors being weather. This can be further exacerbated in drought conditions when roots may not grow well and nutrient movement in the soil is limited. Strong root systems are important in drought conditions and under high corn rootworm pressure situations like continuous corn. A trial conducted at the Monsanto Learning Center at Monmouth, IL was designed to investigate the effects of N rate and timing on corn yield when grown in drought conditions.

## Study Guidelines

Four corn products were planted with relative maturities ranging from 105 to 112. Treatments were applied to a continuous corn field using a conventional tillage system (Table 1). All N was applied as a 32% urea ammonium-nitrate (UAN) solution. Standard weed control was used to maintain a weed-free environment. Side-dress applications were made on June 21, 2013.

## Results

In order for plants to take up adequate amounts of N to support optimum growth, N must move with water to the root through the process of mass flow. Dry conditions later in the growing season likely restricted N availability, which may account for the lack of response to side-dress N applications in 2013 (Figure 1). Previous years' data from the Monsanto Learning Center at Monmouth, IL show a five bushel per acre response to side-dress applications at the full rate (Figure 2).

## Legals

The information discussed in this report is from a single site, 2 replicate 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.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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Table 1. Nitrogen Rate and Timing Treatments	
<b>Rate 1</b>	<b>Half Rate Pre-Plant</b>
	<b>120 lbs N/acre</b>
<b>Rate 2</b>	<b>Full Rate Pre-Plant</b>
	<b>240 lbs N/acre</b>
<b>Rate 3</b>	<b>Half Rate - Split Application</b>
	<b>60 lbs N/acre pre-plant followed by 60 lbs N/acre at V4 stage</b>
<b>Rate 4</b>	<b>Full Rate - Split Application</b>
	<b>180 lbs N/acre pre-plant followed by 60 lbs N/acre at V4 stage</b>

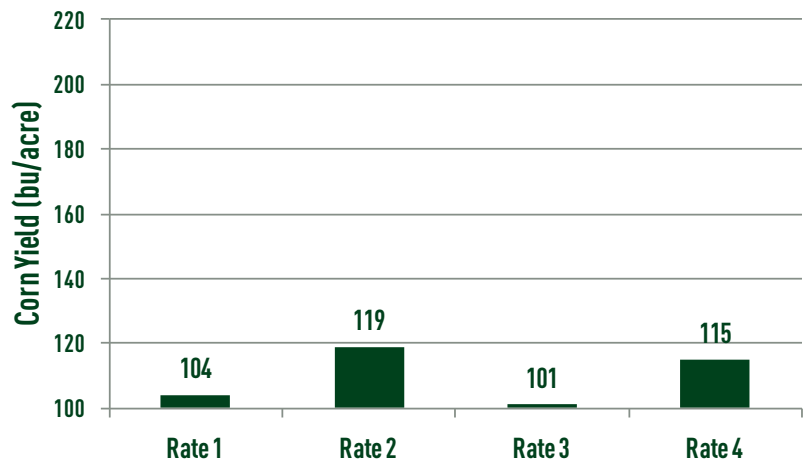


Figure 1. Effect of nitrogen rate and timing on corn yield in 2013.

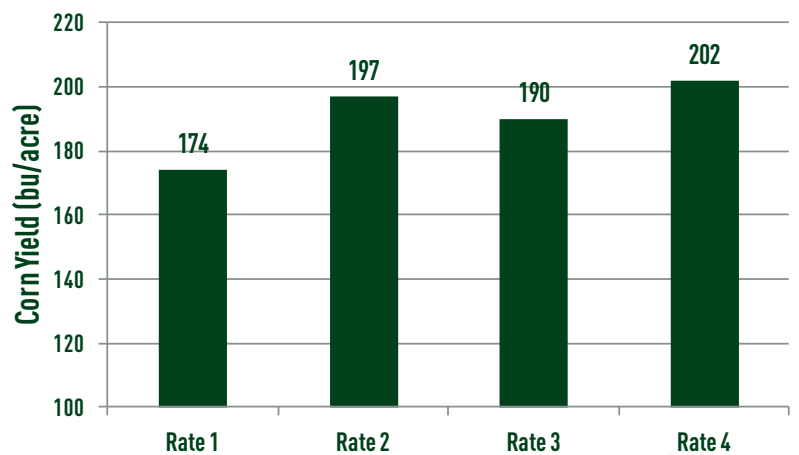


Figure 2. Four year average of effect of nitrogen rate and timing on corn yield from 2009 to 2012.