Corn Max Inputs Trial

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Objective

The objective of this study was to evaluate corn yield benefit from combinations of three different variables: seeding rate, nitrogen rate, and fungicide application.

Background

Crop Year: 2008
Cooperator: Farm Focus/Marsh Foundation
County/Town: Van Wert/Van Wert
Soil Type: Hoytville silty clay loam, Haskins loam
Drainage: Tile- nonsystematic
Previous Crop: Wheat
Tillage: Fall disk/ripper, land leveled. No spring tillage.
Fertilizer: 225 lb/A 2-9-49 broadcast incorporated (Aug. 2007);
95 lb/A 45-0-0 2x2 banded at planting; 135 or 195 lbs/A nitrogen sidedressed as 28% UAN (June 18)
Herbicide: PRE(May 24): Cinch ATZ at 1.75 qt/A + Durango at 1.5 qt/A +2,4-D
LVE6 at 10 oz/A + AMS at 17 lb/100 gal
Hybrid: Stewart 7T765
Insecticide: Poncho 250 on seed
Row width: 30 inches
Planting Rate: see Methods
Planting Date: May 23, 2008
Harvest Date: October 20, 2008

Methods

This study was set up as six treatments with four replications of each treatment in a randomized complete block design. Plot size was 60 feet wide by 600 feet long. The treatments were:

1) 30,000 seeds/A, 180 lbs/A nitrogen, with 6 oz/A Headline fungicide + 0.25% v/v NIS
2) 40,000 seeds/A, 180 lbs/A nitrogen, with 6 oz/A Headline fungicide + 0.25% v/v NIS
3) 30,000 seeds/A, 240 lbs/A nitrogen, no foliar fungicide
4) 40,000 seeds/A, 240 lbs/A nitrogen, with 6 oz/A Headline fungicide + 0.25% v/v NIS
5) 40,000 seeds/A, 240 lbs/A nitrogen, no foliar fungicide
6) 30,000 seeds/A, 180 lbs/A nitrogen, no foliar fungicide

Headline foliar fungicide treatments were applied on August 8 at corn stage R2-blister. Fungicide applications were made with a high clearance ground sprayer in 15 gallons per acre spray volume at 40 psi using TeeJet XR11004 flat fan nozzles on 15 inch spacing.
Harvest populations (October 10, 13) were estimated by counting the number of plants with harvestable ears on each side of a 17 feet 5 inch measured distance at four different locations in each plot. The average of the number of plants per 17 feet 5 inches was converted to plants per acre. Yields were calculated from grain weights measured with a calibrated weigh wagon from the entire 60 feet wide plot (24 rows). Plot moistures were measured with the yield monitor. All yields were adjusted to 15% moisture.

**Results**

Table 1. Harvest population, moisture, and yield means\(^1\) for each treatment.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Harvest Population</th>
<th>Moisture</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,000 seeds/A, 180 lbs/A nitrogen, Headline foliar fungicide</td>
<td>30,600 b</td>
<td>19.4</td>
<td>195.7 a</td>
</tr>
<tr>
<td>40,000 seeds/A, 180 lbs/A nitrogen, Headline foliar fungicide</td>
<td>39,100 a</td>
<td>18.4</td>
<td>183.3 b</td>
</tr>
<tr>
<td>30,000 seeds/A, 240 lbs/A nitrogen, no foliar fungicide</td>
<td>39,400 b</td>
<td>19.2</td>
<td>203.3 a</td>
</tr>
<tr>
<td>40,000 seeds/A, 240 lbs/A nitrogen, Headline foliar fungicide</td>
<td>39,200 a</td>
<td>19.5</td>
<td>186.1 b</td>
</tr>
<tr>
<td>40,000 seeds/A, 240 lbs/A nitrogen, no foliar fungicide</td>
<td>39,200 a</td>
<td>18.6</td>
<td>187.2 b</td>
</tr>
<tr>
<td>30,000 seeds/A, 180 lbs/A nitrogen, no foliar fungicide</td>
<td>30,100 b</td>
<td>19.1</td>
<td>185.5 b</td>
</tr>
</tbody>
</table>

LSD (P=0.05) 1,700 NS 7.9
F-test 69.7 1.0 8.6
CV (%) 3.3 4.4 2.8

\(^1\)Means followed by the same letter in the same column are not significantly different.  
NS= not significant

**Summary**

The results from this one year study did show statistically significant differences in harvest population and yield for the treatments. Significant differences in harvest populations were expected as a result of setting the planter for two different seeding rates. The addition of 60 lbs/A nitrogen caused a significant yield advantage when comparing the treatment consisting of 30,000 seeds/A + 180 lbs/A nitrogen and the treatment consisting of 30,000 seeds/A + 240 lbs/A, with neither treatment receiving fungicide. Also, the addition of Headline foliar fungicide caused a significant yield advantage when comparing the treatment consisting of 30,000 seeds/A + 180 lbs/A + Headline and the treatment consisting of the same seeding rate and nitrogen rate without the addition of Headline fungicide. There is no clear reason why the additional nitrogen or fungicide applications did not cause a significant yield response at the higher seeding rates.

The application equipment used to apply the Headline foliar fungicide caused some wheel track damage to the corn plants within those treatment plots. Analysis of the data from the inside 12 rows harvested with the wheel tracks did not appear different to the data from the outside 12 rows harvested outside of the wheel track damage.
Acknowledgements

OSU Extension- Van Wert and Farm Focus express appreciation to Brent Neate for his assistance and equipment used to make the fungicide applications, and to Robert Mullen, OSU Soil Fertility Specialist, for his assistance in designing this study. Thanks also to Stewart Seeds for supplying the seed, and to DuPont and Dow Agrosciences for supplying herbicides used in this study.

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