



LEARNING CENTER 2011

at Monmouth, Illinois

DEMONSTRATION REPORT

TILLAGE PRACTICES UNDER DIFFERENT ROTATION SYSTEMS FOR CORN PRODUCTION

Tillage practices may be chosen based on residue management, disease management, or soil condition. Growers also have options when it comes to rotation systems, seeding rate, fungicide application, and even planting date in some years. In 2011, the Learning Center near Monmouth evaluated several of these management practices under conventional and strip tillage in corn production.

STUDY GUIDELINES

Five trials were conducted in 2011 at the Monmouth Learning Center near Monmouth, IL to evaluate the yield impact of multiple management practices on corn production under conventional tillage and strip tillage. All trials were studied in a conventional tillage (CT) system, which included chisel plow in the fall and soil finisher in the spring; and strip tillage (ST). Weed management for all trials consisted of PRE: Harness® Xtra 5.6L at 2 qt/acre and POST: Roundup PowerMAX® at 22 oz/acre.

The following management practices were examined:

Trial	Details
Tillage x Planting Date	<ul style="list-style-type: none"> One 105 RM and two 111 RM hybrids planted in continuous corn (CC) at 36,000 seeds/acre Planting dates: Early (4/12/2011); Mid (5/6/2011); Late (5/23/2011) Harvested from Mid-September to early October
Tillage x Seeding Rate	<ul style="list-style-type: none"> Two 111 RM hybrids planted 5/5/2011 in a continuous corn and a corn-soybean (CS) rotation system, harvested in late September to early October Seeding rate: 28,000; 35,000; and 42,000 seeds/acre
Tillage x Fungicide	<ul style="list-style-type: none"> Two 111 RM hybrids planted 5/5/2011 in a continuous corn and a corn-soybean rotation system at 36,000 seeds/acre, harvested in late September to early October. Fungicide application: Headline® at growth stage R2 at 9 oz/acre + Crop Oil Concentrate at 1% volume COC/volume mix

Table 1. Treatment details for the tillage practices study at Monmouth Learning Center, 2011.

RESULTS

This report summarizes three separate trials, with the overall objective to investigate the yield impact of planting date, seeding rate, and foliar fungicide under strip and conventional tillage systems.

Yields were similar for the corn planted at early and mid planting dates (Figure 1). Only the late planted corn showed a decrease in yield of 7.5 bu/acre compared to the early and mid planted corn. These results support previous studies by Monsanto and universities which state that corn yield potential can decrease with delayed planting because of a shorter growing season, insect and disease pressure, and moisture stress during pollination. However, little difference between tillage systems was observed within any planting date (Figure 1).

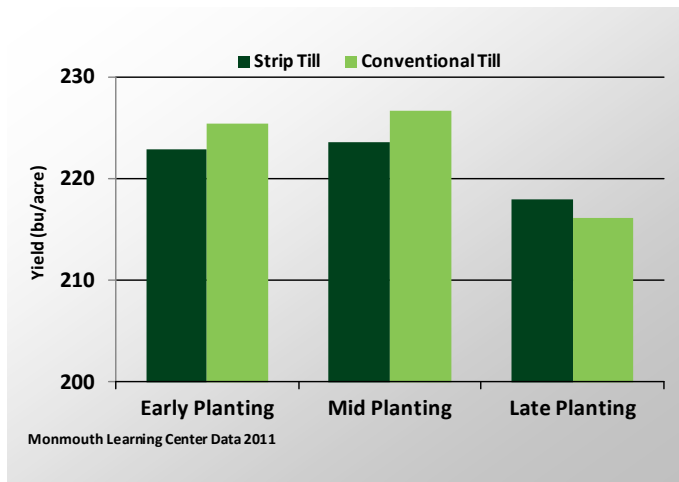


Figure 1. Effect of planting date on yield in continuous corn averaged across hybrids under strip and conventional tillage.

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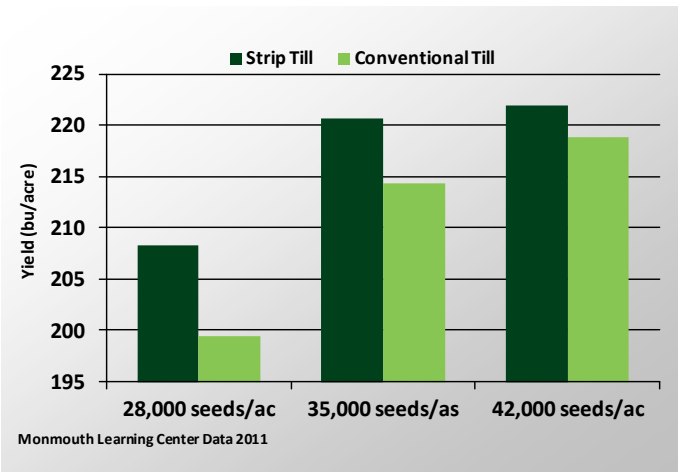


Figure 2. Effect of seeding rate on yield in continuous corn under strip and conventional tillage.

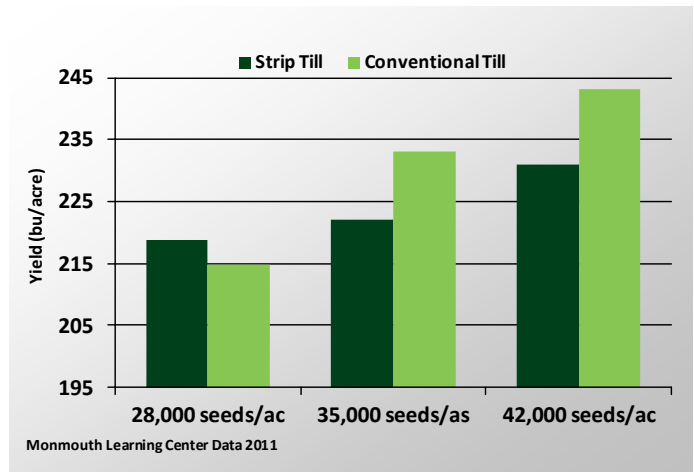


Figure 3. Effect of seeding rate on yield in a corn-soybean rotation under strip and conventional tillage.

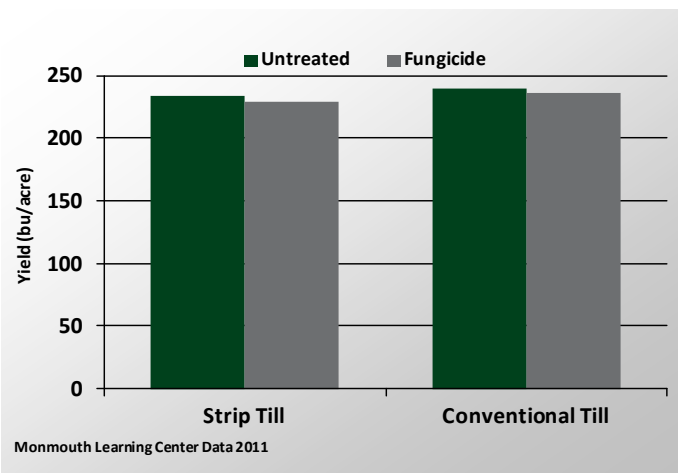


Figure 4. Effect of fungicide application on yield in continuous corn under strip and conventional tillage.

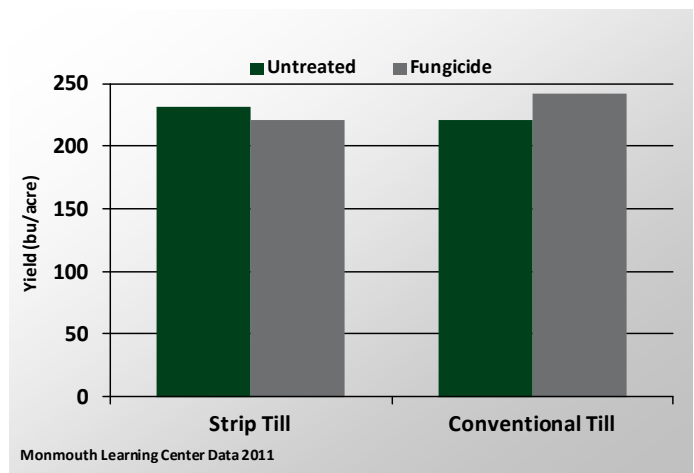


Figure 5. Effect of fungicide application on yield in a corn-soybean rotation under strip and conventional tillage.

Regardless of the rotation system, yield was similar for corn planted at 35,000 and 42,000 seeds/acre (Figures 2 and 3). In general, there was a substantial decrease in yield of 15 bu/acre when seeding rate was lowered to 28,000 seeds/acre. The yield response to tillage practices varied depending on the rotation system. Overall, strip tillage resulted in relatively greater yields across all seeding rates compared to conventional tillage under

CC, while conventional tillage was the yield leader under the CS rotation at 35,000 and 42,000 seeds/acre (Figures 2 and 3). However, a greater yield response to tillage practices was observed in the CS rotation compared to the CC system. This effect could be due to the boost in yield usually seen in CS rotation systems.

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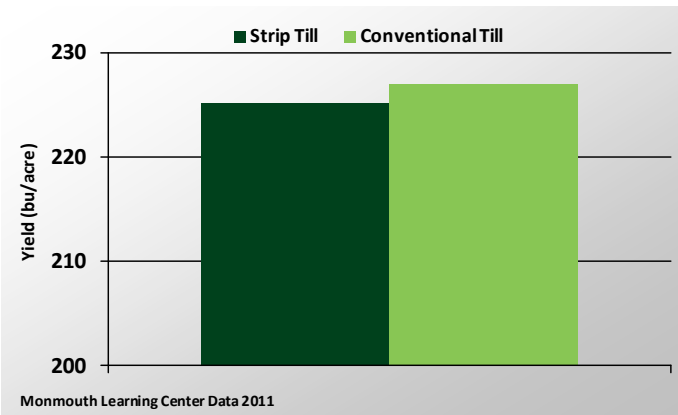


Figure 6. Overall effect of tillage practices averaged across all trials and rotation systems.

Foliar fungicide and tillage practices had little effect on yield in either rotation system suggesting that foliar fungal disease pressure was low this year in this particular site (Figures 4 and 5).

Overall, tillage practices across all trials and rotation systems had very little effect on yield (Figure 6). It is worthwhile to mention that nutrient placement was not done in the strip tilled plots, which is one of the main advantages of this tillage system. Therefore, the results found in this study may not translate to other field situations. Similar demonstrations are planned for next season at the Monmouth Learning Center to include nutrient placement for strip till. Please consult with your agronomist to identify the management practices that are most suitable for the hybrids planted in your area.



Figure 7. Representative examples from each of the rotation systems and tillage practices.

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.

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