

Corn Planting Speed Trial

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Objective

Evaluate the impact of planter speed on corn stand and yield. The purpose of this study is to provide research-based information to base planting speed decisions. This may help improve the overall return per acre by getting crops in the ground in a more timely manner between weather events.

Background

Crop Year: 2021	Tillage: Vertical till in Spring
Location: 40.2590, -83.3322	Soil Test: New Farm, N/A
County/Town: Union County	Planting Date: 5/19/2021
Soil Type: Blount Silt Loam	Seeding Rate: 34,000 seeds/acre
Drainage: N/A	Harvest Date: 11/6/2021
Previous Crop: Soybeans	

Methods

A completely randomized block design was used where four planting speeds were randomized and replicated four times across a 40-acre field. Dekalb 6357 corn was planted on 30-inch row spacing at a fixed seeding rate of 34,000 per acre at speeds of 5 mph, 7.5 mph, 10 mph, and 12 mph with a John Deere ExactEmerge planter. Sixteen row planting passes were made, and eight row harvest passes on one side of each plot were performed. Field conditions were good with adequate moisture and good soil/seed contact. Stand count data was collected at the V4 growth stage. Yield was measured by a calibrated yield monitor.

Results

An analysis of variant formula (ANOVA) was used with Fisher's Protected Least Significant Differences (LSD) test at alpha 0.1. A significant yield difference existed (Table 1) between the planting speed treatments, with the slowest speed (5 mph) having the higher yield (220 bu/ac). No significant yield difference was measured when comparing the slowest and fastest speed treatments. Stand count results showed a trend toward less plants/ac on the fastest speed treatment (12 mph).



Table 1 – Treatments, stand counts, and yield results		
Treatments	Stand Count (plants/ac)	Yield* (dry bu/ac)
5 mph	31,220	220 a**
7.5 mph	30,495	217 b
10 mph	30,968	218 ab
12 mph	29,875	218 ab
LSD:		2.82 bu/ac
CV (%):		1.0%

* Dry yield is standardized based on 15% moisture.

**Treatment means with the same letter are not significantly different.

Summary

These results represent year one of this study in corn. In general, no statistical yield differences exist between the treatments other than the 7.5 mph treatment had the lowest yield at 217 bu/ac. Practically, there were no differences in the resulting stand count and yield data in 2021 within this study. These results suggest there was not an impact on the corn stand and resulting yield for planting up to 12 mph with this planter technology. An additional year (year two) is planned for 2022.

With this knowledge, operators with this type of planter technology may choose to plant at faster speeds, using the equipment to its fullest potential and helping to maximize the weather windows of opportunity in the spring to complete planting. Because the planter used in this study was only rated for speeds up to 10 mph, further study may be needed on the effects of the higher end planting speed (>10 mph) on the equipment itself. If planting at faster speeds, checking planting consistency (e.g., seed depths) and quality (e.g., seed cover, seed spacing) is recommended.

Constraints

In the process of planting the study, it was noted that reaching higher ground speeds may be problematic when using the current equipment of the cooperating farmer. Field conditions, slope, and tillage all appear to be influential factors in reaching higher speeds without upgrading tractor to higher horsepower.

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