

NO-TILL PLANTER SET-UP FOR HEAVY RESIDUE: AFTERMARKET CLOSING WHEEL ASSESSMENT

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No-till planting into high residue environment remains a challenge for Wisconsin producers, especially when considering planting into cover crop residue. There are several aspects to planter set-up that can have an impact on seed placement and emergence. To maintain a reasonable scope for this study a set of differing closing wheels was selected for assessment.

Methods:

A John Deere 1700 Planter was utilized for this study (Figure 1). The planter was 3-point hitch mounted and was equipped with variable rate seeding technology (hydraulically operated) and down pressure was controlled by air bags on each row unit. Down pressure could not be varied between row units. Four different closing wheels were assessed:

1. Dawn Curvetine
2. Yetter Paddle
3. Martin Spike
4. Standard Rubber (control)

A pair of each closing wheel was installed on each row and rows were treated as replicates within the study. After each pass of the planter the closing wheels were randomized between rows to remove any effect that an individual row had on the performance of the closing wheel. The down pressure on each closing wheel was set in the “second notch” to maintain consistency.

Four plot locations were planted across Wisconsin. These locations were in Rock County, Dane County, Dunn County, and Marathon County. Soil types contained within these locations spanned the types of soils encountered within Wisconsin from a heavy clay to sandy loam soil. Plots consisted of several border rows (8 minimum) and 120 replicate planter passes per location. Two corn hybrids were used in this study. The southern locations received PioneerTM P0339AMXT and northern locations received Tracy Seeds T068-26 GTA.

Emergence was counted at each location several times. The intent was to assess emergence rate along with final emergence to assess closing wheel performance. Emergence rate was assessed based on growing degree units past planting.

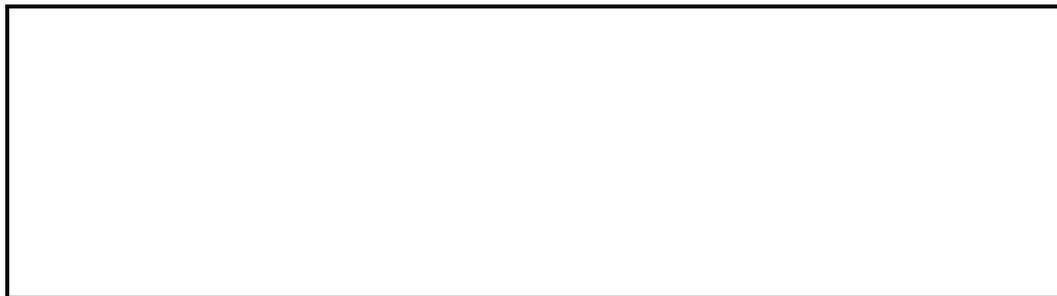


Figure 1. Planter setup for closing wheel study. From left to right, standard rubber, Martin Spike, Dawn CurveTine, and Yetter Paddle. Replications were randomized by row meaning the closing wheels were removed and re-installed every planter pass. Four sites were assessed (Rock Co., Dane Co., Dunn Co. and Marathon Co.) with ~120 replications per site. Emergence rate and yield were measured.



Figure 2. Differing closing wheel results after a single planter pass. The planter used for this study was a John Deere 1700 with MaxEmerge™ row units. Trash sweeps ran ahead of the opener discs and no seed firmer devices were installed. From left to right, standard rubber (x2), Martin Spike (x2), Dawn CurveTine (x2), and Yetter Paddle (x2).

Results:

None of the results reported here were statistically significant! A second year of the study will be completed in 2018 to increase the statistical power of the study to hopefully achieve statistical significance. However, numerical difference among the closing wheels did exist. Figure 3 shows the emergence rates for the different closing wheels at the four different plot locations.

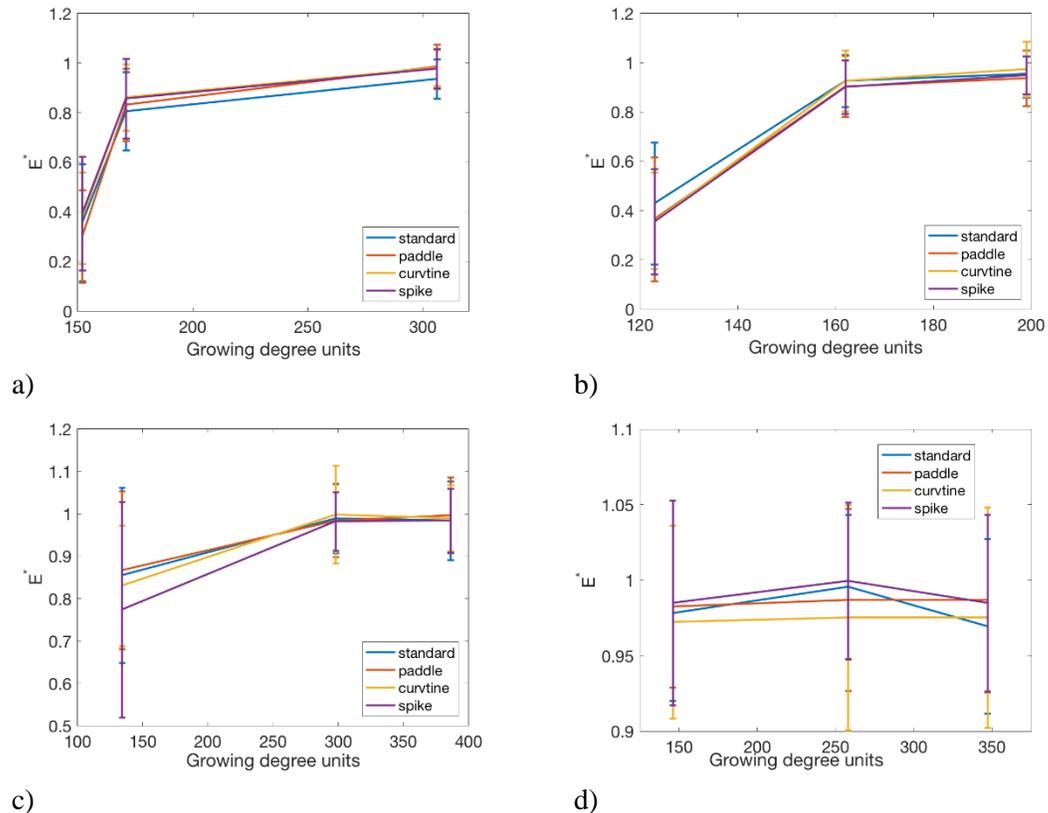


Figure 3. Emergence rate of corn at the four different plot locations: a) Rock Co., b) Dane Co., c) Marathon Co., and d) Dunn Co.

Table 1 shows numerical means of final emergence by wheel type (not statistically significant) and plot location (significant). Preliminary interpretation shows that the aftermarket closing wheels, specifically the Dawn Curvtine, yielded numerically better emergence than the rubber closing wheels in Dane Co. This is not to say that you should invest in these currently, but we are hopeful that a second year of the study will result in statistically significant differences from these treatments. Stay tuned!

Table 1. Percent emergence for all closing wheel types and locations ($\alpha = 0.10$).

Wheel Type	Location	Emergence	Statistical Significance
Standard	all	96%	No
Yetter Paddle	all	98%	No
Dawn Curvtine	all	98%	No
Martin Spike	all	97%	No
all	Rock Co.	97%	Yes
all	Dane Co.	95%	Yes
all	Dunn Co	99%	Yes
all	Marathon Co.	98%	Yes

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