

EFFECT OF PLANTER SEED FIRMERS ON CORN STAND UNIFORMITY AND GRAIN YIELD

Mike Rankin^{1/}

Introduction

One of the many attachments available for farmers to purchase and put on their corn planter are devices collectively known as “seed firmers”. Seed firmers attach to the planter directly behind the seed furrow openers and “press” the seed into the bottom of the furrow. The “advertised” result is more uniform seed placement and depth, better emergence, and ultimately higher grain yields. To date, there have been few coordinated studies documenting the positive merits of seed firmer use. Farm Journal magazine has reported results from on-farm comparisons where corn grain yields averaged 5 to 6 bushels more with the use of seed firmers (Finck, 1996). The objective of this study was to measure and determine the impact of seed firmers on several stand variability parameters and grain yield.

Methods

In 1998 on two Fond du Lac County farms (Malone and Eden locations), corn was planted in randomized strips both with and without Keeton seed firmers. In 1999, a similar study was established in Manitowoc County (Newton location). Field plots were established using a randomized complete block design with three replications. After corn emergence, the distance between 30 consecutive plants was measured for each row of every plot. Stand uniformity was characterized by determining standard deviation (SD), plant density, row gaps per 50 ft., and seed doubles per 50 ft. using a Microsoft Excel[®] spreadsheet program. Plant doubles were defined as any plants within 2 inches of each other and gaps were defined as spaces of 12 inches or more without an emerged plant. Grain yields were measured in the fall. Statistical analysis was done using AgStats2 (Karow, 1990). At one other location in 1998 (Two Rivers in Manitowoc County), the same treatments were imposed and data was collected with the exception of grain yield. Planting information for all plot locations is presented in Table 1.

Location	Planter Make/model	Planter Type	Row number/ width (#/in.)	Hybrid	Planting Date	Planting Rate (seeds/A)
Eden	JD 7000	finger	6/30	P38W36	21 May 1998	35,600
Malone	JD 7200	finger	6/30	S4100	11 May 1998	30,900
Two Rivers	JD 7200	air-vac	6/30	P3905	14 May 1998	28,500
Newton	JD 7200	finger	6/30	P3730	15 May 1999	33,014

Results and Discussion

Differences in standard deviation of in-row plant spacings were small and inconsistent across locations (Figure 1). The same was true for plant density effects (Figure 2), seed doubles (Figure 3), and row gaps (Figure 4). None of the plant uniformity and density parameters were statistically significant (LSD_{0.05}).

1/ Crops and Soils Agent, University of Wisconsin-Extension, Fond du Lac County
400 Campus Dr., Fond du Lac, WI 54935

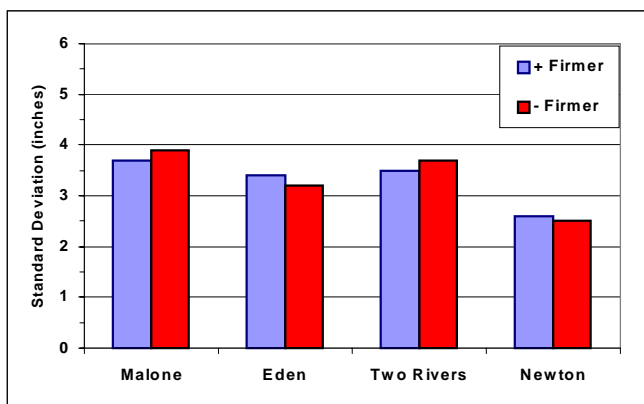


Figure 1. Effect of seed firmers on in-row corn plant spacing standard deviation.

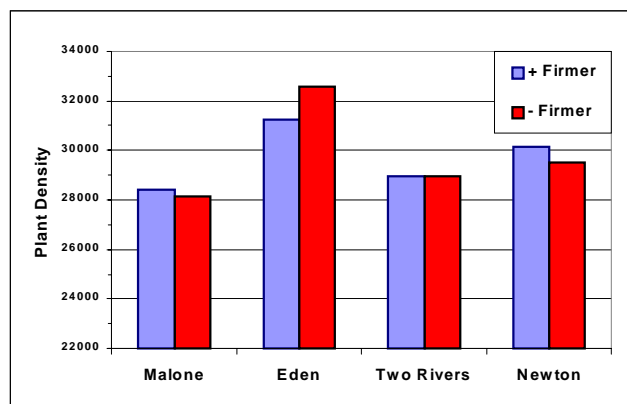


Figure 2. Effect of seed firmers on corn stand density as measured by plants per acre.

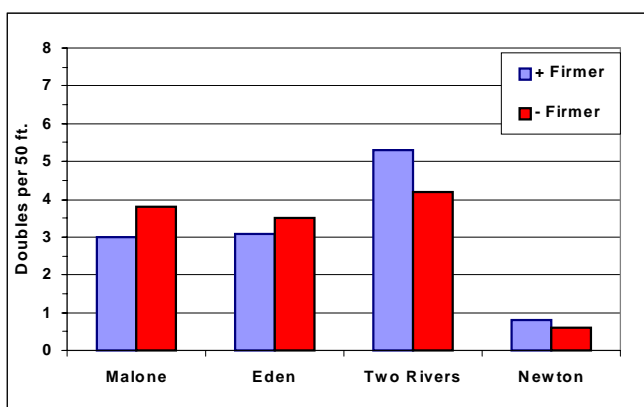


Figure 3. Effect of seed firmers on in-row corn doubles.

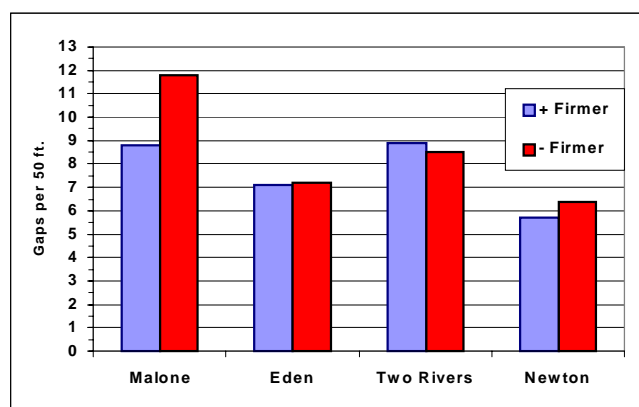


Figure 4. Effect of seed firmers on in-row corn gaps.

At the three locations where grain yields were measured, there was no significant difference between seed firmer treatments ($LSD_{0.05}$). These results are presented in Figure 5.

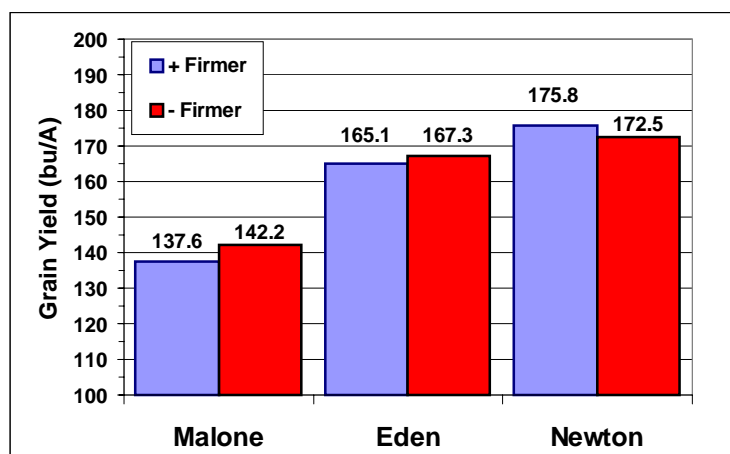


Figure 5. Effect of seed firmers on corn grain yield.

In the limited number of field locations evaluated, we did not see consistent stand uniformity or yield benefits to using seed firmers. Both 1998 and 1999 were exceptional growing seasons in Wisconsin. Perhaps in a more adverse growing environment, the benefits would have been more pronounced. Depending on the type and make of seed firmer purchased, investment costs are between \$25 and \$60 per unit. Especially on the lower end of this investment range, it would not be difficult to achieve a reasonable return with only a 1 – 2 bushel per acre increase in grain yields. However, there are many other factors having a greater influence on stand uniformity and yield that probably need to be addressed first. These include insuring proper planting speed, maintaining the planter and its moving parts, checking for worn parts and replacing them according to manufacturers' guidelines, and making sure that the planter is running level. Seed firmers will not cover-up for otherwise poor management. They may also need to be taken off or lifted-up when planting in wet conditions to avoid mud build-up and seed "dragging".

References

Finck, Charlene. 1996. Put seed in its place. Farm Journal. mid-January.
Karow, R., 1990. AgStats ver. 2.2. Oregon State University

Acknowledgements

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