

7.5" vs. 30" Row Spacing for Soybeans

Study ID: 073081201701

County: Hamilton

Soil Type: Hastings silt loam

Planting Date: 5/26/17

Harvest Date: 10/19/17

Population: 130,000

Variety: A2814NLL

Reps: 4

Previous Crop: Corn

Tillage: Disk

Herbicides: Pre: 3.2 oz/ac Authority® First, 2.5 fl oz/ac Blanket™, and 24 fl oz/ac Durango® on

5/27/17 **Post:** 24 oz/ac Liberty® and 5.12 oz/ac

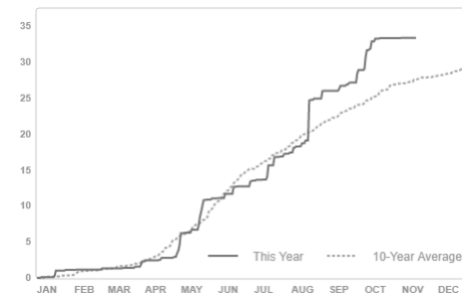
Targa™ on 6/20/17; 32 oz/ac Liberty® on 7/21/17

Seed Treatment: Cruiser Maxx®

Note: Light hail on the field

Irrigation: Pivot, Total: 2"

Rainfall (in):



Introduction: The objective of this study was to evaluate soybeans planted in 30" row spacing versus drilled in 7.5" row spacing. Yield was recorded using a yield monitor; yield data was cleaned prior to analysis (Table 1, Figure 1). The grower was interested in evaluating the row spacing options not only for yield, but also for weed control. Because 7.5" rows canopy earlier, they have more potential for weed suppression. Aerial imagery was collected throughout the summer to observe differences in total vegetation and canopy closure for each of the row spacings. Aerial imagery was used to calculate the normalized difference vegetative index (NDVI). This index is indicative of overall plant biomass and greenness. Imagery and NDVI from July 1 (Figure 2) and August 17 (Figure 3) are presented here. A 15" row spacing treatment is also shown in the imagery. However, because the 15" treatment was established by double planting with a 30" row spacing planter, soil was thrown over the previous planted row and there were some issues with establishment. For this reason, results of the 15" treatment are not presented in this report.

Results:

Table 1.

	Harvest Stand Count (plants/ac)	NDVI 7/1	NDVI 8/17	Moisture (%)	Yield (bu/acre) [†]	Marginal Net Return‡ (\$/ac)
7.5" drilled	118,800	0.849 A*	0.947 A	10.70 A	69 A	565.41 A
30" planted	108,600	0.788 B	0.946 A	10.60 B	66 B	533.84 B
P-Value	N/A	<0.0001	0.197	0.128	0.025	0.025

*Values with the same letter are not significantly different at a 90% confidence level.

[†]Yield values are from cleaned yield monitor data. Bushels per acre corrected to 13% moisture.

[‡]Marginal net return based on \$8.90/bu soybean and \$45/ac seed costs for all treatments.

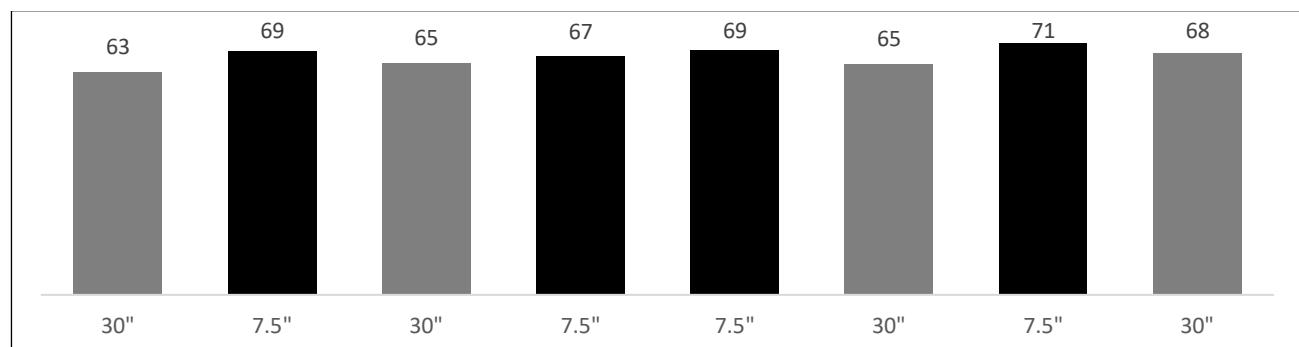
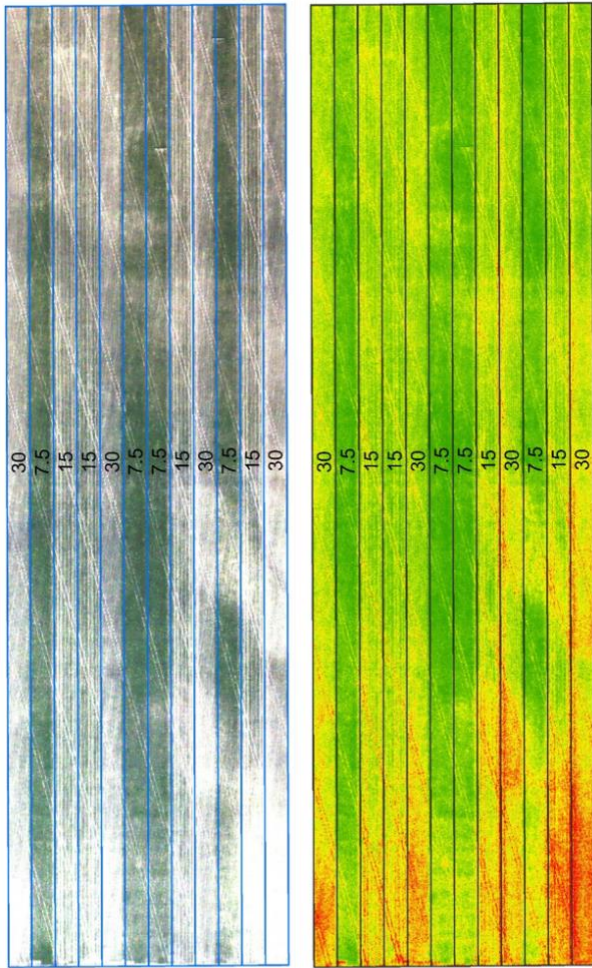
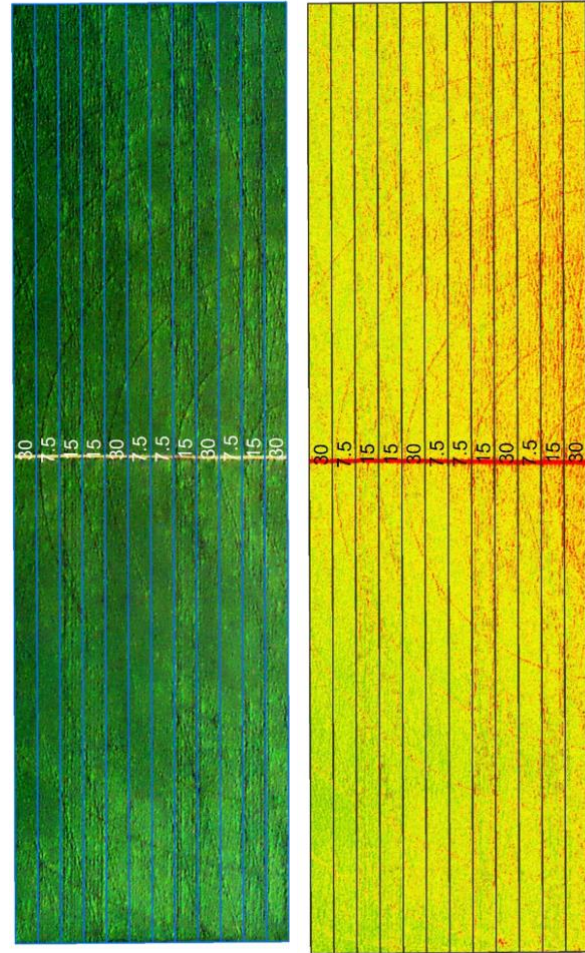


Figure 1. Yield average by treatment (bu/ac) across the field.



NDVI July 1
 High : 0.93
 Low : 0.45



NDVI Aug. 17
 High : 0.98
 Low : 0.70

Figure 2. True color (red-green-blue) imagery (left) and NDVI (right) from July 1, 2017.

Figure 3. True color (red-green-blue) imagery (left) and NDVI (right) from August 17, 2017.



Figure 4. A close-up of the aerial imagery and corresponding picture taken from the ground show differences in sprayer tracks between the 30" treatment and 7.5" treatment.

Summary:

- NDVI values from the July 1 imagery show significant differences between the treatments, with the 7.5" treatment having the higher NDVI. This imagery clearly shows the potential for earlier canopy closure with the 7.5" row spacing. By the August 17 imagery there were no longer differences in NDVI between the treatments. *Figure 4* shows a close-up of the aerial imagery and a corresponding picture taken from the ground. This demonstrates the differences in sprayer tracks between the 30" treatment in the foreground and the 7.5" treatment in the distance.
- Stand counts were collected on June 20 at representative locations across each row spacing studied and averaged. Because each treatment and replication was not counted, statistics cannot be run.
- The 7.5" drilled treatment had a statistically higher yield than the 30" row spacing treatments.
- Due to identical treatment costs, the 7.5" drilled treatment had the highest net return, resulting in an increase of \$31.57/ac compared with the 30" treatment.

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