2020 Soybean KTS Study

Soybeans were planted on April 21st at 140,000 plants/acre on 15" rows with three different liquid starter delivery treatments to show how different starter deliveries affect emergence, plant health, nutrient uptake through soybean tissue, and overall yield. The three starter delivery treatments used were no fertilizer on the planter, John Deere 2x2, and Yield 360 Bandit 2x2x2 system. We anticipated the 2x2x2 would show better emergence and early season plant health. Fifteen gallons of KTS was used as the starter fertilizer. We used a 16R31 ExactEmerge planter and split the planter for each planting depth, so we set half the planter for treatment A and the other half for treatment B to maximize field space. Therefore, there were 15 or 16 rows per depth.

We learned early on when setting the planter for the corn 2x2 trial that it was difficult to adjust the planter and maintain even planting depth due to half the planter having 2x2x2 and the other half 2x2. The 2x2x2 Bandits required more downforce to get the planter unit into the ground. We ended up having to remove the no-till coulters from the entire planter to reduce weight and help get the planter into the ground and maintain planting depth.

We noted daily emergence differences by population counts for seven days. We took a final population count on 5/11 (one week after initial emergence). All population counts were taken from the center two rows of each treatment and the average was recorded.

Soybean KTS Treatment	Average Population at 24hr emergence (5/5 AM -5/6 AM)	Final Population at 7 days (5/11)
2x2x2	106	120
2x2	97	116
No fertilizer	98	116

Table 1. Soybean KTS population counts. Multiply population listed x 1000.

The 2x2x2 Bandits showed the best initial and final emergence. Late emergers came up later in the season, but harvest stand counts were not taken due to how thick the soybeans were. There were no visual stand differences between the treatments.

	2x2 KTS Soybean		2x2x2 KTS Soybean		No KTS Soybean	
	5/29	6/19	5/29	6/19	5/29	6/19
N	4.15%	6.57%	4.07%	7.12%	4.27%	7.31%
P	0.44%	0.50%	0.44%	0.58%	0.47%	0.75%
K	2.78%	2.52%	2.92%	2.82%	3.03%	2.64%
Mg	0.40%	0.37%	0.42%	0.43%	0.43%	0.49%
Ca	1.87%	1.10%	1.86%	1.14%	1.79%	1.01%
S	0.32%	0.43%	0.29%	0.43%	0.30%	0.38%
B	33	45	32	48	31	36
Zn	47	41	46	43	55	50
Mn	30	36	26	37	30	36
Fe	312	156	251	162	273	132
Cu	10	14	11	15	11	13

Table 2. Soybean 2x2 study tissue results.

Tissue results were inconclusive due to the KTS being applied on every other soybean row (2x2 and 2x2x2 were installed on corn rows) and tissue samples were randomly selected throughout the entire treatment instead of just from KTS application rows. We would like to see this trial repeated with KTS applied on every row and follow with tissue samples.

Soybean KTS Treatment	Moisture	Dry Yield (bu/ac)
2x2x2	15.3%	69.30
2x2	15.4%	70.49
No fertilizer	15.1%	70.11

Table 3. Soybean KTS yield data.

*This study was for demonstrative purposes only and was non-replicated.