2020 Corn Sidedress Study

Corn was planted on April 21st at 34,000 plants/acre with a 16R31 ExactEmerge planter. Fifteen gallons of 32% N and 10-34-0 were used as the starter fertilizer, 50/50 blend (7.5 gallons of each fertilizer). This study was conducted to look at different sidedress delivery methods and how different delivery positions affected plant health, nutrient uptake through corn tissue, and overall yield. The three sidedress delivery treatments used were next to the row, middle of the row, and both next to and middle. There were 16 rows per treatment.

We noted emergence differences by population counts every 12 hours for the first five days then daily differences for days six-nine. We had several late emergers that emerged after we had stopped daily notes, so we took a final population count on 5/28 (three weeks after initial emergence) and noted the number of late emergers. All population counts were taken from the center two rows of each treatment and the average was recorded.

Corn Sidedress Treatment	Average Population at 24hr emergence (5/5 AM -5/6 AM)	Average Population at 48hr emergence (5/5 AM – 5/7 AM)	Average Population at 22 days (5/13)	Late Emergers 3+ weeks (5/28)	Final Population at 37 days (5/28)
Next to Row	6	14	28.5	2	30.5
Middle of Row	6.5	15	28	7	30.5
Dual Delivery (next to and middle of row)	8.5	14	28	7	29.5

Table 1. Corn sidedress study population counts. Multiply population listed x 1000.

On May 13th, the corn was sidedressed at 55 gallons per acre across all treatments. The application rate was not adjusted for different delivery methods. We used the Unverferth NutriMax dual delivery applicator for all treatments. For the next to the row treatment, we utilized only the tubing delivery to place all the nitrogen on the soil surface next to the corn row, on both sides of the row. For the middle of the row treatment, we utilized only the coulter to place all the nitrogen underneath the soil surface in the middle of the corn row. For the combination delivery both next to and middle of the row, we utilized the NutriMax applicator as it was designed and placed half the nitrogen through the coulter and half through the surface tubing delivery.

	Next to Row			Middle of Row			NutriMax		
	5/29	6/19	7/10	5/29	6/19	7/10	5/29	6/19	7/10
N	5.22%	4.05%	3.13%	4.98%	4.04%	3.43%	4.95%	4.21%	3.35%
P	0.43%	0.41%	0.41%	0.43%	0.40%	0.41%	0.45%	0.42%	0.42%
K	4.55%	2.63%	2.20%	3.96%	2.81%	2.39%	4.23%	3.04%	2.43%
Mg	0.30%	0.32%	0.29%	0.30%	0.29%	0.24%	0.31%	0.26%	0.29%
Ca	0.81%	0.54%	0.55%	0.93%	0.51%	0.47%	0.94%	0.57%	0.55%
S	0.30%	0.23%	0.20%	0.35%	0.23%	0.21%	0.30%	0.26%	0.21%
B	5	12	7	5	11	6	4	12	6
Zn	27	31	24	25	29	23	27	29	25
Mn	69	57	31	72	54	33	69	52	50
Fe	188	124	107	228	134	112	242	148	114
Cu	19	17	12	21	15	12	21	17	12

Table 2. Corn sidedress study tissue results.

Corn Sidedress Treatment	Moisture	Dry Yield (bu/ac)
Next to Row	17.1%	152.5*
Middle of Row	19.0%	212.4
Dual Delivery (next to and middle of row)	19.1%	213.7

Table 3. Corn sidedress study yield data.

Initially the 5/29 (V4 growth stage), the next to the row treatment had the highest N content. By 6/19 (V8 growth stage), the NutriMax treatment had the highest N content. By early ear development (R1-R2), the middle of the row treatment had the higher N content. Part of the next to the row treatment was accidentally sprayed with calcium chloride in preparation for early harvest for the field day. Please note the moisture and yield difference due to premature death. Overall yield differences were inconclusive.

*Accidentally sprayed with calcium chloride in preparation for early harvest for the field day.

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