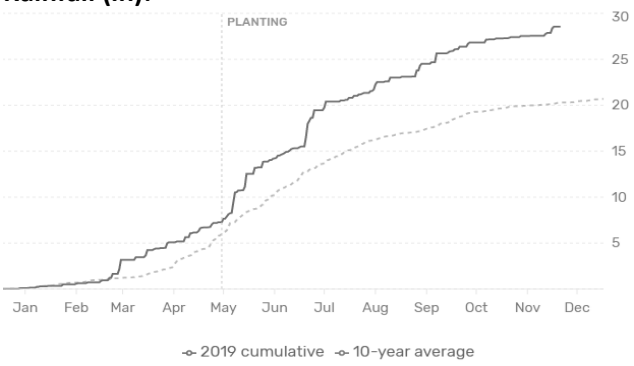
Impact of Streaming Nozzles versus 360 Y-DROP® for N Application in Corn

Study ID: 0881161201901
County: Sheridan
Soil Type: Bridget loam 0-1% slope; Keith loam gravelly substratum, 0-1% slope
Planting Date: 5/14/19
Harvest Date: 11/20/19
Seeding Rate: 35,000
Row Spacing (in): 30
Variety: Channel® 192-10STXRIB
Reps: 6
Previous Crop: Corn
Tillage: No-Till
Herbicides: ***Pre:*** 32 oz/ac 5.4 lb glyphosate and 8 oz/ac 2-4D Ester on 5/1/19 ***Post:*** 32 oz/ac 5.4 lb glyphosate and 5 oz/ac Status® on 6/20/19

Fertilizer: 15 lb N/ac, 45 lb P_2O_5/ac, 3 lb S/ac, 0.5 lb Zn/ac, and 0.25 lb Mn/ac banded with planter; 75 lb N/ac and 5 lb S/ac top dressed through Y-DROP® or stream (replicated treatments) on 7/12/19; 95 lb N/ac and 7.5 lb S/ac was applied through fertigation
Irrigation: Pivot, Total: 5.54"
Rainfall (in):



Soil Test (May 2019) – 2 samples were taken in the study area:

	Soil pH	Soluble Salts 1:1	Excess Lime	Organic Matter	Nitrate-N ppm				Olsen Bicarb	S	Zn	Ammonium Acetate (ppm)				CEC	% Base Saturation				
	1:1	mmho/cm	Rating	LOI %	(0-8")	(8-24")	P1	P2	P	(ppm)	(ppm)	K	Ca	Mg	Na	me/100g	H	K	Ca	Mg	Na
North	8.0	0.3	L	2.3	5	6	12	102	8	6	1.8	639	4070	283	29	24.5	0	6.7	83.2	9.6	0.5
South	7.8	0.3	L	2.4	6	8	18	93	16	6	1.8	685	3361	324	33	21.4	0	8.2	78.5	12.6	0.7

Introduction: The goal of this study was to evaluate in-season nitrogen application methods. Standard streaming nozzles were compared to 360 Y-DROP® nozzles, which apply N at the base of the plant. 75 lb N/ac and 5 lb S/ac were applied on 7/12/19. Corn yield and net return were evaluated. Leaf burn was documented with pictures in the field.

Results:

	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
Streaming Nozzle N Application	184 A*	695.37 A
Y-DROP® N Application	185 A	697.22 A
P-Value	0.513	0.796

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre adjusted to 15.5% moisture.
‡Marginal net return based on $3.83/bu corn, $8/ac for streaming application, and $11/ac Y-DROP application.

Figure 1. Images of leaf burn observed two weeks after in-season N application. Leaf burn was visible with streaming nozzle application (left), but not with Y-DROP® application (right).

Summary:

- There was no difference in yield or net return between the two application methods.
- Fertilizer burn on the leaves was noted in the streaming nozzle method of application, but not in the 360 Y-DROP® application method. Differences were documented with pictures taken two weeks following in-season N application (Figure 1).

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