



Permanent Plots - Corn After 9 Years (19-715)

Experiment Info:

Planted:	5/17/2019
Harvest:	11/08/2019
Yield Goal:	175 bu/A
Target Fert.:	175-30-60
Variety:	P9998M
Population:	32,000
Row Width:	30"
Prev. Crop:	soybeans
Plot Size:	15 x 210
Replications:	3

Soil Test Values (ppm):

pH:	7
CEC:	12.4
%OM:	3.4
Bray P1:	25
Bicarb P:	
K:	111
S:	5
%K:	2.3
%Mg:	21.4
%Ca:	75.9
%H:	0
Zn:	1.5
Mn:	4
B:	0.7

Objective:

To track different fertilizer programs in a corn-soybean rotation over multiple growing seasons to measure sustainability for yield.

2019 is the ninth year of the so-called Permanent Plots. In this experiment that began in 2010, several different corn fertilizer programs were applied to a corn experiment. These were two conventional fertilizer programs (one all dry and one a combination of liquid and dry); a comparable AgroLiquid program and a Low Rate Conventional program that applied the same actual pounds of conventional nutrients as there is in the AgroLiquid program. The full rate conventional programs applied 270 lb/A of primary nutrients compared to 157 lb/A for the AgroLiquid program. In this experiment, there are actually two experimental sites next to one another for the corn-soybean rotation.

Long-Term Fertilizer Program Effects on Yield of Corn										
Programs applied to the same plots in a corn-soybean rotation										
North Central Research Station (Field 714/715)										
Trt.	Fertilizer Program	Application Details	Rate/A							
1	Nitrogen only	28%/eNhance (sidedress)	47 gal							
2	AgroLiquid	Pro-Germinator + Sure-K + Micro 500 (IF); 28%/eNhance (sidedress)	3 gal + 5 gal + 2 qt; 47 gal							
3	Low-Rate Conventional (nutrient lb/A=AgroLiquid)	0-0-62 (b'cast fall after soybeans); 10-34-0 + 9%Zinc + 9% MN (IF); 28% UAN (sidedress)	20 lb; 2 gal + 1 qt + 1 qt; 47 gal							
4	Conventional liquid	0-0-62 (b'cast fall after soybeans); 10-34-0 + 9%Zinc + 9% MN (2x2); 28% UAN (sidedress)	200 lb; 7.5 gal + 1 qt + 1 qt; 57 gal							
5	Conventional dry	0-0-62 (b'cast fall after soybeans); Urea + DAP + 24% zinc (preplant b'cast incorp)	200 lb; 365 + 65 + 8 lb							
(IF) = In-Furrow										
Corn Yield By Year: Average Bushels/Acres (3 replications)										
Trt	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg.
1	195.5	189.9	195.1	185.3	182.9	160.5	184.2	161.5	167.4	180.3
2	213.8	217.9	213.6	189.4	224.7	160.9	212.1	189.3	197.3	202.1
3	202.9	204.7	196.4	184.2	196.2	159.9	190.7	170.8	178.4	187.1
4	207.7	197.1	207.1	195.6	221.4	160	212.5	189	200.8	199.0
5	202.4	196.4	204.1	193.8	224.6	169.4	197.5	183.8	181.4	194.8
	204.5	201.2	203.3	189.7	210.0	162.1	199.4	178.9	185.1	192.7

Conclusions:

- The AgroLiquid program has resulted in yields that are similar to those of the higher rate Conventional programs. In fact over the nine years, the AgroLiquid program has an average yield that is several Bu/A higher than that of the Conventional Programs.
- The AgroLiquid P and K programs are applied in the seed furrow at planting. The conventional programs required separate applications for the potash followed by tillage.
- The initial 2011 program was set for a yield goal of 175 Bu/A, but as seen, the average yields have been considerably higher. Despite the higher yields, the low-rate AgroLiquid program has consistently maintained yield while being easier to apply.