Permanent Plots - Corn After 10 Years (20-714)

Experiment Info:	
Planted:	4/27/2020
Harvest:	10/20/2020
Yield Goal:	170 bu/A
Target Fert.:	175-30-60
Variety:	P0306 AM
Population:	33,000
Row Width:	30"
Prev. Crop:	Soybeans
Plot Size:	15 x 210
Replications:	4

Soil Test Values (ppm):	
pH:	6
CEC:	10.2
%OM:	2.4
Bray P1:	9
Bicarb P:	0
K:	92
S:	3
%K:	2.3
%Mg:	16.5
%Ca:	66.6
%H:	14.3
Zn:	1
Mn:	5
B:	0.3

Objective:

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

2020 is the tenth and final 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. There 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 are 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 two experimental sites next to one another for the corn-soybean rotation. Respective treatments remained in the same plots year after year.

Fertilizer programs applied to the same plots in a corn-soybean rotaton
North Central Research Station (Field 714/715)

Trt.	Corn 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

Average Treatment Corn Yield By Year (Bushels/Acre, 4 Replications)

Trt	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg	Extra Bu/A over 10 yrs.
1	195.5	189.9	195.1	185.3	182.9	160.5	184.2	161.5	167.4	176.5	**179.9**	
2	213.8	217.9	213.6	189.4	224.7	160.9	212.1	189.3	197.3	199.3	**201.8**	**219**
3	202.9	204.7	196.4	184.2	196.2	159.9	190.7	170.8	178.4	187.5	**187.2**	**73**
4	207.7	197.1	207.1	195.6	221.4	160	212.5	189	200.8	206.5	**199.8**	**199**
5	202.4	196.4	204.1	193.8	224.6	169.4	197.5	183.8	181.4	200.6	195.4	**155**
	204.5	**201.2**	**203.3**	**189.7**	**210.0**	**162.1**	**199.4**	**178.9**	**185.1**	**194.1**	**192.8**	

Statistics for 10 year treatment averages: LSD(0.05): 5; CV: 9.75%.

Conclusions:

- Over 10 years, the AgroLiquid program has resulted in higher yields than the higher rate conventional programs, and much higher than the pound for pound rate of conventional.
- 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.
- Over the 10 years, the AgroLiquid program produced 219 more bushels per acre than the nitrogen only treatment, or an extra year's harvest.. It produced higher than full conventional programs and considerably higher than the equal pounds of conventional fertilizer showing that the nutrient formulation technology is effective with AgroLiquid.