



Permanent Fertilizer Programs in Corn 2011-2016 (16-714)

Experiment Info:

Planted:	5/9/2016
Harvest:	10/25/2016
Yield Goal:	175 bu/A
Target Fert.:	
Variety:	DKC 53-68 RIB
Population:	32,300
Row Width:	30"
Prev. Crop:	Soybeans
Plot Size:	15 x 210
Replications:	4

Soil Test Values (ppm):

pH:	6
CEC:	11.4
%OM:	2.3
Bray P1:	12
Bicarb P:	
K:	106
S:	24
%K:	2.4
%Mg:	17
%Ca:	64.8
%H:	14.8
Zn:	.7
Mn:	7
B:	.5

Objective:

Evaluate sustainability of several corn fertilizer programs over a period of six years in a corn - soybean rotation.

An experiment has been underway since 2011 to evaluate fertilizer program sustainability in a corn soybean rotation. The experiment layout has a corn experiment adjacent to a soybean experiment where the same programs are implemented in the same plots in the respective experiments each year. This year is the sixth year of the experiment and the corn yields for the various treatments are displayed in the following table. The 2016 growing season was characterized by a shortness of rainfall, particularly during the months of June and July, resulting in yields averaging nearly 50 Bu/A lower than the previous year. The fertilizer recommendation for a 175 Bu/A yield goal is 180-30-60 - 2 Zn - 2 Mn. The AgroLiquid program applies fertilizer components at an "equivalent" value where there are reduced rates of prescribed nutrients. There is also a treatment of Low-Rate Conventional which applies conventional nutrients at the same rate as the AgroLiquid rates.

Fertilizer Program Comparisons in Corn.

North Central Research Station 2011 - 2015

	Program	2011	2012	2013	2014	2015	2016	Avg.
1	Nitrogen Only	195.5	189.9	195.1	185.3	182.9	160.5	184.9
2	AgroLiquid	213.8	217.9	213.6	189.4	224.7	160.9	203.4
3	Low-Rate Conventional	202.9	204.7	196.4	184.2	196.2	159.9	190.7
4	Conventional liquid	207.7	197.1	207.1	195.6	221.4	160	198.2
5	Conventional dry	202.4	196.4	208.4	193.8	224.6	169.9	199.3
		204.5	201.2	204.1	189.7	210.0	162.2	195.3

	Program Details	Rate/A
1	28%/eNhance (sidedress)	47 gal
2	Pro-Germinator + Sure-K + Micro 500 (IF) 28%/eNhance (sidedress)	3 gal + 5 gal + 2 qt 47 gal
3	0-0-62 (fall after soybeans) 10-34-0 + 9% Zinc + 9% Mn (IF) 28% UAN	20 lb 2 gal + 1 qt + 1 qt 47 gal
4	0-0-62 (fall after soybeans) 10-34-0 + 9% Zinc + 9% Mn (2x2) 28% UAN	200 lb 7.5 gal + 1 qt + 1 qt 57 gal
5	0-0-62 (fall after soybeans) Urea + DAP + 24% zinc (preplant b'cast incorp) (IF) = In Furrow (Totally Tubular)	200 lb 365 + 65 + 8 lb

LSD(0.05) 9.9 LSD(0.1) 8.2 LSD(0.2) 6.3, CV: 6.9%

Conclusions:

- In all but 2016, treatment yields have exceeded the 175 Bu/A yield goal, even that of the nitrogen only. This was a new farm at the start of the experiment, and corn had not been grown here for some time prior. So the yield goal was lower than wheat was observed, but the same programs were kept in order to measure sustainability.
- Except for the 2016 growing season, all total program treatments produced yields that were greater than that of this Low Rate Treatment.
- However, the six year average of AgroLiquid has a yield that is higher than that of the Conventional Liquid and Dry treatments.