Permanent Fertilizer Programs in Corn by Year (2011-2017)

Experiment Info:	
Planted:	5/18/2017
Harvest:	10/21/2017
Yield Goal:	170 bu/A
Target Fert.:	
Variety:	DKC 46-36 RIB
Population:	32,500
Row Width:	30"
Prev. Crop:	Soybeans
Plot Size:	15 x 210
Replications:	4

Soil Test Values (ppm):	
pH:	7
CEC:	12.4
%OM:	3.4
Bray P1:	25
Bicarb P:	17
K:	111
S:	5
%K:	2.3
%Mg:	21.4
%Ca:	75.9
%H:	0
Zn:	1.5
Mn:	4
B:	0.7

Objective:

Evaluate sustainability of several corn fertilizer programs over a period of seven 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 (Yield, Bu/A)

North Central Research Station 2011 - 2017

	Program	2011	2012	2013	2014	2015	2016	2017	Avg.
1	**Nitrogen Only**	**195.5**	**189.9**	**195.1**	**185.3**	**182.9**	**160.5**	**184.2**	**184.8**
2	AgroLiquid	213.8	217.9	213.6	189.4	224.7	160.9	212.1	**204.6**
3	**Low-Rate Conventional**	**202.9**	**204.7**	**196.4**	**184.2**	**196.2**	**159.9**	**190.7**	**190.7**
4	Conventional liquid	207.7	197.1	207.1	195.6	221.4	160	212.5	**200.2**
5	**Conventional dry**	**202.4**	**196.4**	**208.4**	**193.8**	**224.6**	**169.4**	**197.5**	**198.9**
		204.5	**201.2**	**204.1**	**189.7**	**210.0**	**162.1**	**199.4**	195.8

	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)**	**200 lb** **365 + 65 + 8 lb**

(IF) = In Furrow

Conclusions:

- The AgroLiquid fertilizer program had the highest corn yield averaged over the past seven years. This proves sustainability even when applying lower rates of actual nutrients.
- The sustainability is further proven when compared to the Low-Rate Conventional which applies the same pounds per acre of actual nutrients as the AgroLiquid, but has a lower average yield over time.
- Yields will vary with conditions over the years. That's why it is important to make evaluations over time to prove sustainability.