

**Experiment Info:**

Planted:  
 Harvest:  
 Yield Goal:  
 Target Fert.:  
 Variety:  
 Population:  
 Row Width:  
 Prev. Crop:  
 Plot Size:  
 Replications:

**Objective:**

To measure the effects of different fertilizer programs applying different amounts and types of fertilizer products on soil test levels.

One concern of a soil fertility program is the effect on soil test levels. Although a good yield is the goal, preservation of soil nutrient levels is also of concern. In this test, several different programs were developed with different products for effects on crop yield and soil test level. Based on a beginning soil test in the spring of 2010, a recommendation for 160 Bu/A of corn was developed that applied 175-30-60-2Zn (260 lb of primary nutrients/A). A comparable AgroLiquid treatment was developed that applied lower rates per acre that totaled 156 lb of primary nutrients/A. For comparison, a treatment of conventional fertilizers was applied at a low rate that equaled that of the AgroLiquid. Similar comparisons were conducted in soybeans, although the 0-0-62 was applied following soybean harvest for the next two crops, as is commonly done. Soil samples were collected in the fall prior to this application. The first sample is from the N only treatment in 2011 to serve as the base for comparison.

**Soil Test Values (ppm):**

pH:  
 CEC:  
 %OM:  
 Bray P1:  
 Bicarb P:  
 K:  
 S:  
 %K:  
 %Mg:  
 %Ca:  
 %H:  
 Zn:  
 Mn:  
 B:

**Soil Sample Comparisons After Four Seasons of Corn/Soybean Crops Under Different Fertilizer Programs**

North Central Research Station. Field 715.

year	treatment	pH	% OM	CEC meq/100 g	P1 ppm	P2 ppm	K ppm	Ca ppm	S ppm	Zn ppm
Fall 2011	N only	7	3.3	15.2	13	54	106	2281	11	1.5
Fall 2014	AgroLiquid	6.5	3.5	13.7	13	41	104	1997	20	1.3
Fall 2014	low rate conv	6.7	3.2	12.9	12	45	100	1914	13	1.2
Fall 2014	conv liquid/dry	6.6	3.2	13.0	13	46	103	1936	13	1.4
Fall 2014	conv dry	6.6	3.4	13.3	14	48	105	2003	15	1.5
Fall 2014	N only	6.7	3.5	14.0	13	47	103	2100	12	1.5

Soil samples collected in the fall after harvest, collecting 12 cores per plot (10 from between the rows and 2 from the row itself)  
Corn (2011 and 2013)

AgroLiquid: 3 gal/A Pro-Germinator + 5 gal/A Sure-K + 2 qt/A Micro 500 (in furrow); 47 gal/A 28% + eNhance (sidedress)  
 Low rate conventional: 20 lb/A 0-0-62 after soybeans; 2 gal/A 10-34-0 + Zn + Mn (in furrow); 47 gal/A 28% UAN (sidedress)  
 Conventional liquid/dry: 200 lb/A 0-0-62 after soybeans; 7.5 gal/A 10-34-0 + Zn + Mn (in furrow); 57 gal/A 28% UAN (sidedress)  
 Conventional dry: 200 lb/A 0-0-62 after soybeans; 65 lb/A 18-46-0 + 365 lb urea + 2 lb/A Zn and Mn (pre-plant incorporated)  
 N only: 47 gal/A 28% + eNhance (sidedress)

Soybeans (2012 and 2014)

AgroLiquid: 5 gal/A Sure-K + 1 qt/A Micro 500 (in furrow)  
 Low rate conventional: 20 lb/A 0-0-62 after soybeans (no fertilizer applied to the soybeans otherwise)  
 Conventional liquid/dry: 200 lb/A 0-0-62 after soybeans (no fertilizer applied to the soybeans otherwise)  
 Conventional dry: 200 lb/A 0-0-62 after soybeans (no fertilizer applied to the soybeans otherwise)  
 N only (corn): no fertilizer in soybeans

**Conclusions:**

- After four seasons, there are no apparent differences in soil test levels from the different treatments, even though treatments were applied at the full recommendation, reduced recommendation or no P and K. Treatment yields appear elsewhere in this report.
- With regard to yield, each year the corn and soybeans has far out-yielded the level for which the nutrients are applied. This experiment will continue, and it will be interesting to follow soil test levels in the future.
- It has been debated whether or not the recommendations should be changed with regard to the yields that have been obtained over the years. Perhaps they should stay the same to see long term effects vs increasing the rates due to concerns of preservation of soil test levels. Likely these base treatments will remain.