



Foliar Fertilizer Applications at High Rates to Track Tissue Test and Yield (20-507b)

Experiment Info:

Planted:	5/25/2020
Harvest:	10/8/2020
Yield Goal:	65 bu/A
Target Fert.:	0-0-60
Variety:	P20T64E
Population:	140,000
Row Width:	15"
Prev. Crop:	Corn
Plot Size:	15 X 44
Replications:	1

Soil Test Values (ppm):

pH:	6.6
CEC:	8.1
%OM:	2
Bray P1:	30
Bicarb P:	0
K:	154
S:	6
%K:	4.9
%Mg:	18.6
%Ca:	69.2
%H:	6.5
Zn:	1.1
Mn:	5
B:	0.3

Objective:

Make foliar fertilizer applications to soybeans and track tissue test levels and yield.

Foliar fertilization to soybeans challenge because sometimes they result in a yield response and sometimes they don't. Foliar fertilizers have been long-researched at the NCRS, But there has not been a consistent monitoring of tissue test levels following application. Sometimes there is a demonstrated increase of a particular nutrient and sometimes not. This particular experiment was set up as a non-replicated demonstration test to utilize some unused plots of another experiment. Applications of treatments were to single plots, but the plots were laid out in succession and were uniform. It was hoped that there would be some findings to warrant further testing. Unfortunately since this was not a typical replicated plot test, there was some miscommunication during harvest and the Mn treatments were missed, and a harvest error on another. But there were some interesting findings worth reporting. Research of these treatments will be expanded in 2021 with a full replicated plot experiment.

+7d (R3) +21d (R4)				+7d (R3) +21d (R4)				+7d (R3) +21d (R4)			
Sure-K	%K	%K	Bu/A	Mn*	Mn ppm	Mn ppm	Bu/A	B	B ppm	B ppm	Bu/A
check	1.96 S	1.79 S-L	82.9	check	89 S-H	72 S	--	check	--	44 S	83.7
2 gal	2.31 H	2.01 S	80.4	1 qt	93 H	68 S	--	8 oz	--	43 S	--
4 gal	2.52 H	2.05 S	83.6	2 qt	112 H-E	72 S	--	1 pt	--	45 S	--
6 gal	2.18 S-H	2.09 S	95.6	4 qt	146 E	61 S-L	--	1 qt	--	53 S-H	101.2
8 gal	2.26 H	2.02 S	94.6	6 qt	313 E	74 S	--	2 qt	--	57 H	96.5
Normal:	2	2		Normal:	70	70		Normal:		45	

* - applied with 2 gal/A Sure-K

L: Low; S: Sufficient; H: High; E: Excessive

Applications made on 7/21 with backpack sprayer: 15 gpa/50 psi/TJ02 nozzle.

Soybeans were 25" tall in the R2 stage (full flower with small pods forming in lower nodes).

Rainfall and irrigation after application before first sampling: 1.12"; between first and second sampling: 2.46".

Tissue sampling collected the uppermost fully developed trifoliate leaf. There were 15 samples per plot.

Row spacing: 15". Applied with planter on 5/25: 5 gal/A Sure-K + 1 qt/A Micro 500.

Conclusions:

- Sure-K applications increased leaf tissue K, but higher rates did not produce higher tissue levels. The rates above 2 gal/A were higher than is normally applied because in the past, tissue K increases haven't been consistent. There was a yield increase with higher rates.
- Manganese rates were higher than usual, and they did show a linear increase in tissue level with application rate at the first sampling. All levels decreased by the second. Where did it go? Unfortunately these plots were not harvested for yield.
- Unfortunately the early B samples were not collected. But the highest plot yield was with a 1 qt/A application, which is higher than is normally applied.