

2020 Union County Soybean K Fertility Trial

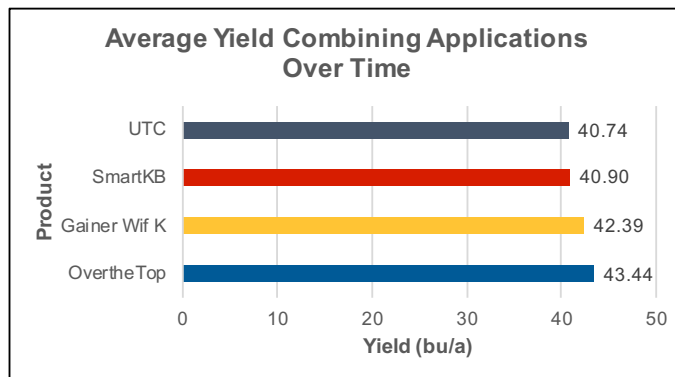
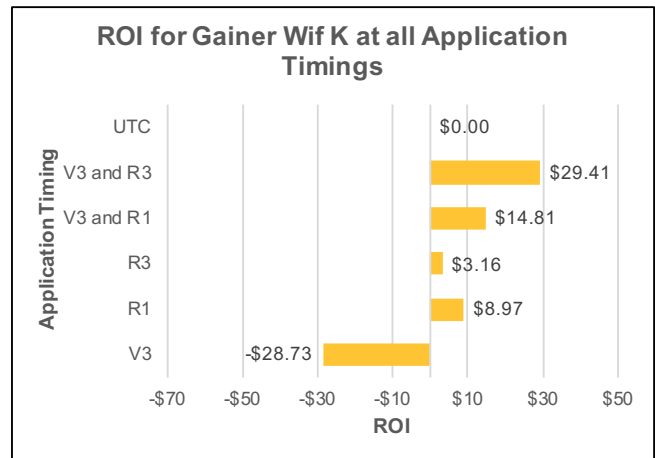
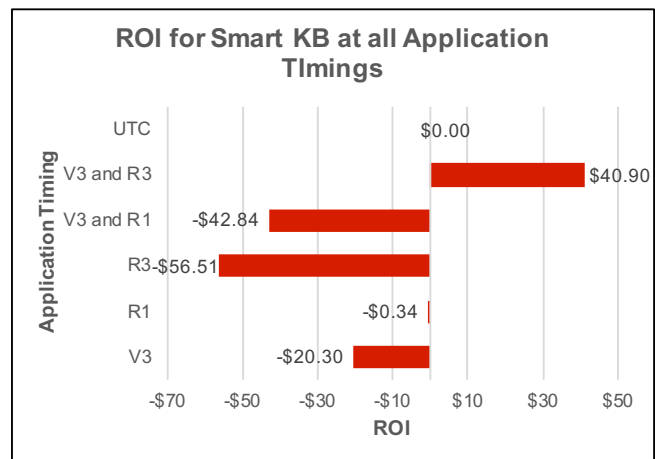
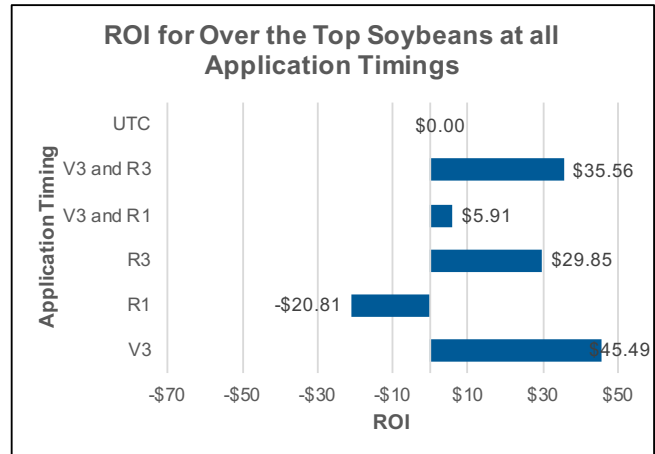
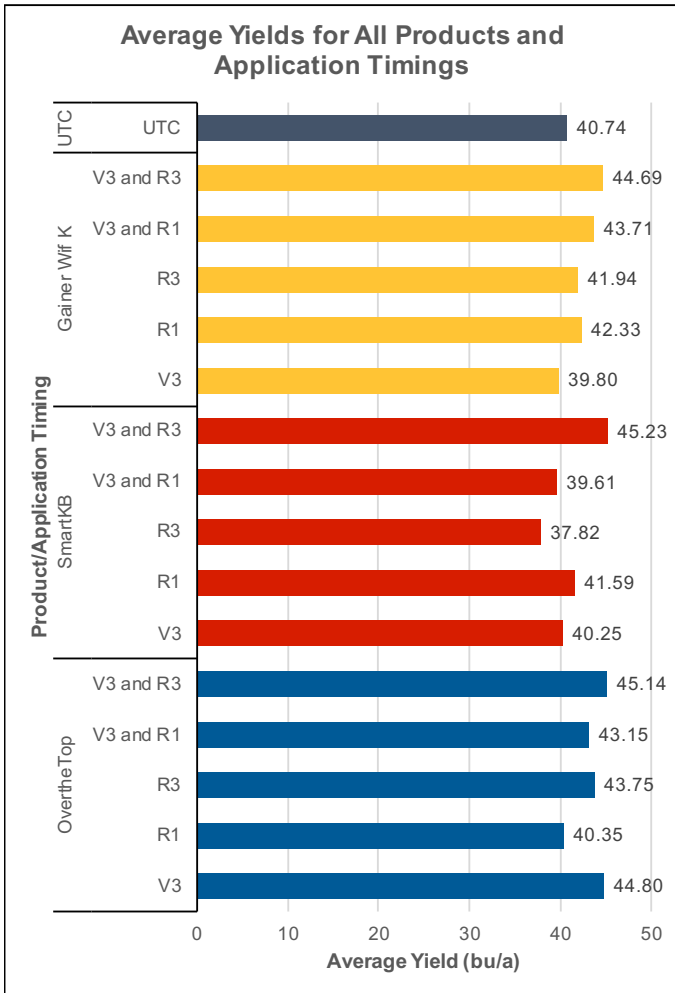
Planting Date	July 16, 2020	Agent Notes - This was a foliar fertility study in soybeans that aimed to identify if these products positively impact yield and nutrient levels in the soybeans. The foliar products all had a focus on potassium as the main nutrient source. In addition to looking at multiple products, we also looked at multiple application timings. The applications were made at the following growth stages: V3, R1, R3, V3 and R1, and V3 and R3. These different application timings were based on the growth stages in which soybeans need potassium most, and if this additional potassium would aid in increasing yield. Thank you to Austin Grading and Farm Services for partnering with us for this trial.		
Seeding Rate	140,000			
Spacing	7.5			
Harvest Date	November 6, 2020			
# of Replications	4			
Weather Data	Month	Avg. High Temp.	Avg. Low Temp.	Avg. Rainfall (in.)
	July	92.5	71.6	3.3
	August	89	70.6	4.1
	September	80.7	62.2	4.5
	October	75.8	53.5	6.6
*Weather data based on National Oceanic and Atmospheric Administration (NOAA) data (https://w2.weather.gov/climate/index.php?wfo=gsp)				

Average Yields For All Products and Application Timings			
Company	Product	Application Timing	Average Yield*
AgBiologic	OvertheTop	V3	44.80
		R1	40.35
		R3	43.75
		V3 and R1	43.15
		V3 and R3	45.14
Brandt	SmartKB	V3	40.25
		R1	41.59
		R3	37.82
		V3 and R1	39.61
		V3 and R3	45.23
Winfield	Gainer Wif K	V3	39.80
		R1	42.33
		R3	41.94
		V3 and R1	43.71
		V3 and R3	44.69
UTC	UTC	UTC	40.74

Average Yield Combining Applications Over Time		
Company	Product	Average Yield
AgBiologic	OvertheTop	43.44
Winfield	Gainer Wif K	42.39
Brandt	SmartKB	40.90
UTC	UTC	40.74

Cost of Product				
Company	Product	Cost of Unit	Rate (per acre)	Cost (per acre)
AgBiologic	OvertheTop	\$120 per 15 lbs	1 lb	\$8.00
Winfield	Gainer Wif K	\$24 per gallon	5 lb	\$7.72
Brandt	SmartKB	\$77.72 per 50 lbs	1 qt	\$6.00

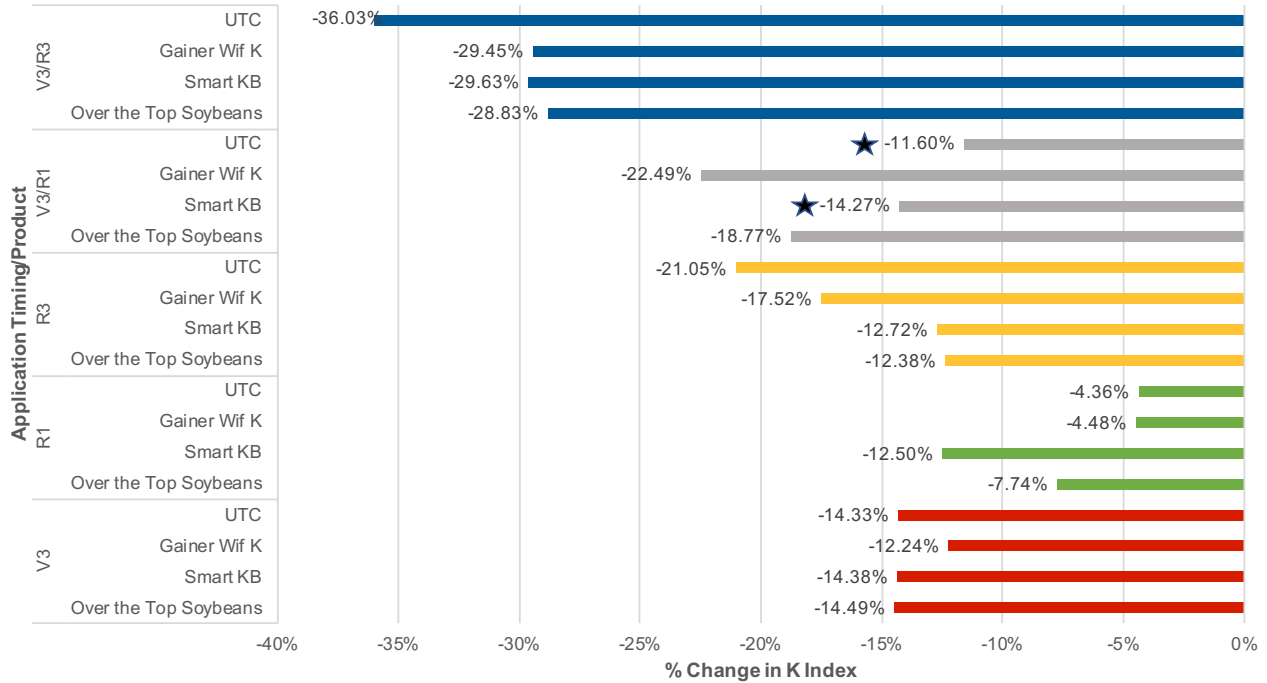
Charts



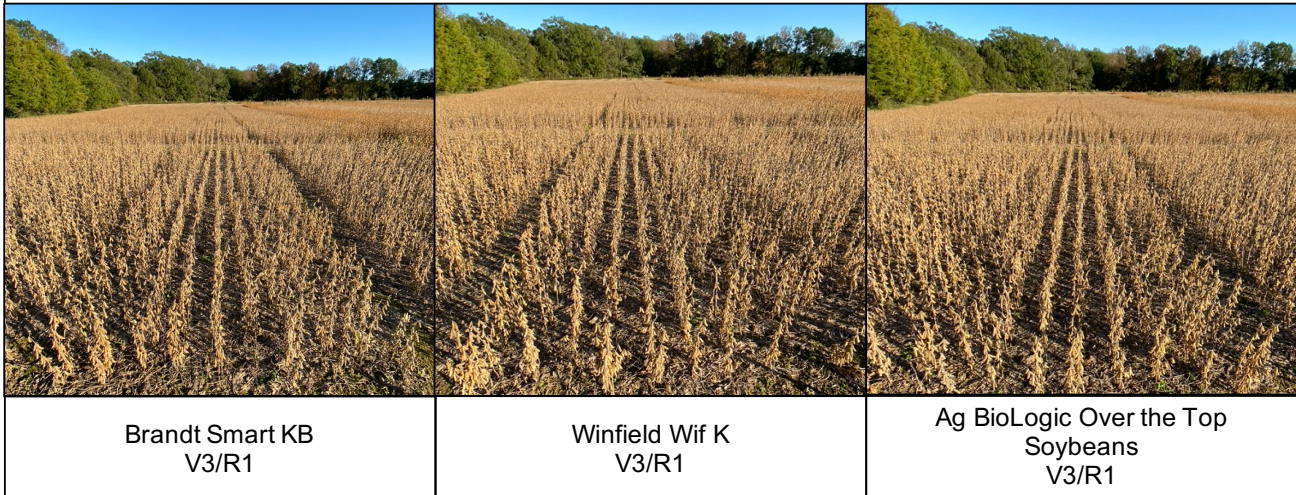
When running statistics for this trial, we found that there was no significant impact of timing on yield at $p < 0.10$. Therefore, we then combined all application timings, and found that these products did not have significant impact on yield during this trial year at $p < 0.10$. In other words, all products yielded statistically similar.

ROI values based on chemical cost (shown in chart "Cost of Product"), estimated application cost of \$7 per acre, and soybean price of \$14.90 (price on March 9, 2021)

% Change of K Index Pre-Application VS 2 Weeks Post-Application



For this study, we took whole plant tissue samples pre application and two weeks post application to compare the changes in K over the course of the study. We ran statistics with the percent change between these two timings (pre- and two weeks post-application) on each application timing separately to identify if any product had a significant impact on K-index during these times ($p < 0.01$). We found that only the V3 and R1 combination application that the Check and Brandt Smart KB both had significantly lower reductions in K-index from before the V3 application to 2 weeks after the R1 application (indicated above with the stars). In all other application timings, the changes in K-Index were statistically similar.



Take Home Messages:

- We found that overall, in this study there was no significant impact on yield for these products at all application timings.
- We found that overall, there was limited impact of these products on foliar K in this study.
- When applying economic information to the yield data, there may be opportunity to receive a positive ROI for applying these products.
 - For every product, combination application at V3 and R3 resulted in a positive ROI
- **IMPORTANT NOTE:** There were no visible symptoms or evidence of K deficiency in the field throughout the season - other research has shown that foliar products are most effective in fields with visible deficiency symptoms.