Low Mu Tech Soybean Trial

Purpose: Compare Low Mu Tech Against a Commercial Graphite/Talc Lubricant for Performance in Plantability, Emergence, Early Plant Growth, and Overall Yield in Soybean.

Methods: Lubricants were applied to seed at the recommended rate of 1 cup per 140,000 count bags of seed. A CaseIH lubricant that is composed of 50% blend of graphite and talc was used. Treated soybean treatments had CruiserMaxx + Clariva applied in a slurry of 5 OZ per hundred weight of seed. The slurry did not contain lubricant. Plots were planted with an Almaco Seed Pro360 precision plot planter with the specifications mentioned below (Table 1). Drop population was recorded for each plot in which there was no difference detected between treatments. Planter units were cleaned between each lubricant treatment to prevent cross-contamination of lubricants. Herbicides were applied with a SpraCoupe 4660. Plant emergence was documented at a minimum every two days in a marked 10' section of row within the plot. A soybean plant was counted as emerged when it reached true unifoliate. Subjective vigor ratings were collected, and were based on a 1 to 9 scale with 9 indicating the most vigor. Plant spacing was recorded between 20 plants in each plot, and spacing variability was determined by calculating the standard deviation for each plot. At 21 days after planting, 5 consecutive plants were cut at the base and weight recorded. Data was subjected to analysis of variance (ANOVA) via a mixed model in SAS JMP Pro 13. Replicated blocks were treated as random factors. Data residuals that were greater than 3 standard deviations from the mean were considered outliers and excluded from analysis. Means were separated using Fisher's protected LSD (alpha=0.05) when significance was detected.

Table 1. Agronomic Management Information for the Low Mu Tech Soybean Trial.

STUDY INFORMATION	
Hybrid	Golden Harvest 3980L
Planted	5/16/2018
Row Width	15"
Population	150,000 Plants/AC
Tillage	Vertical Tillage
Herbicides	PRE: Boundary 2.5 (10 GPA) POST: Liberty 32 OZ/A (20 GPA)
Fertility	13-65-115
Plot Size	8.75' (W) X 45' (L)
Design	Split-Plot Design
Replications	4
Soil Type	Putnam Silt Loam

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Result Comments:
There were no statistical differences were detected for any of the early data collected (Tables 2 & 3). There were also no significant differences or interactions between treated and untreated soybean. Emergence for the graphite blend and Low Mu Tech products trended slightly higher than no lubricant (Figure 1). In regards to variation in plant spacing, there were no statistical differences between treatments (Figure 2). Early plant growth trended higher with the Low Mu Tech lubricant compared to the other treatments. This trend was evident in both fresh weight and vigor ratings, but was not statistically significant. (Figure 3 & Table 4)

Table 2. Analysis of Variance for Soybean Emergence Counts.

	Emergence 5/25	Emergence 5/26	Emergence 5/27	Emergence 5/29	Emergence 5/30	Emergence 5/31	Emergence 6/1
Lubricant	0.7940	0.9006	0.9059	0.5611	0.4681	0.5771	0.2618
Seed Treatment	0.2017	0.8110	0.4336	0.2169	0.3132	0.5854	0.6610
Lubricant X Seed Trt	0.7232	0.3379	0.7450	0.5783	0.4048	0.5594	0.6533
CV%	28.4	18.9	17.8	11.5	10.6	11.2	9.2

Table 3. Analysis of Variance for Soybean Collected Data Traits.

	Drop Pop	Vigor 5/30	Vigor 6/6	Vigor 6/14	5 Plant Weight	Plant Spacing (Inches)	Plant Spacing Standard Deviation
Lubricant	0.3178	0.837	0.0837	0.6699	0.4022	0.2099	0.3604
Seed Treatment	0.1618	0.3787	0.2126	0.7699	0.4340	0.0798	0.3498
Lubricant X Seed Trt	0.9323	0.1144	0.5694	0.7049	0.5403	0.5958	0.5216
CV%	2.7	10.4	14.6	17.9	22.2	9.5	21.3

Figure 1. Emergence of Soybean Over Time for Each Lubricant Treatment.

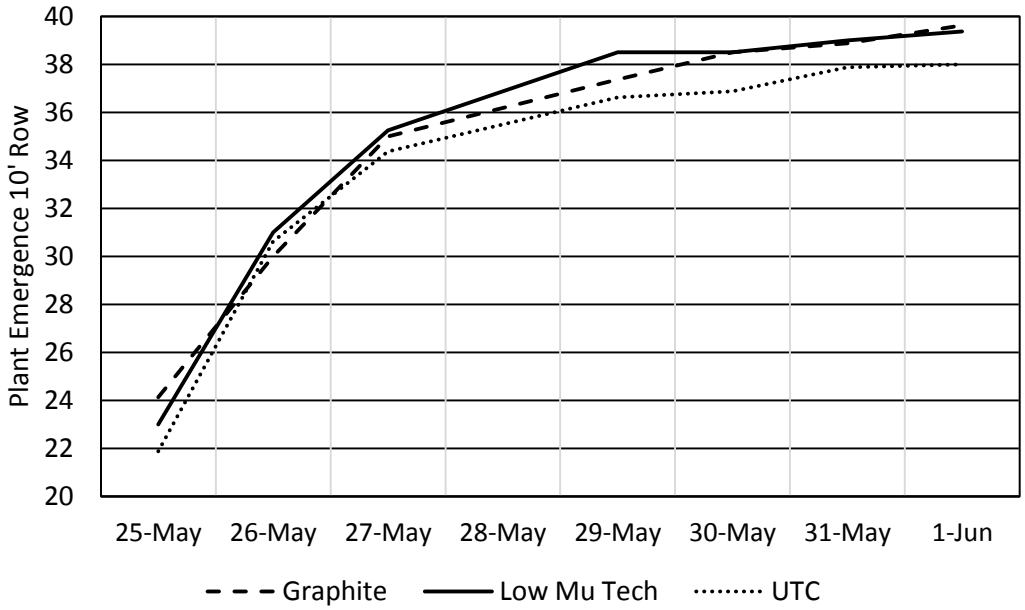

Figure 2. Plant Spacing Stand Deviation Averaged For Each Lubricant Treatment.