



**Evaluation of the performance of a soy protein seed lubricant**

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With the arrival of a new seed lubricant product (DUST, Low Mu Tech, Calamus, IA), we evaluated its performance against two common seed lubricants, graphite and Fluency (Bayer Crop Science, USA in both corn and soybeans in 2019. DUST is a soy protein lubricant that is a cleaner alternative to commonly available seed lubricants, such as graphite, which can create a mess for users of the product. It is also reported to contribute to early plant vigor. As such, we utilized a completely randomized design with five replicates and an untreated control treatment (UTC) to evaluate plant emergence and early season vigor in corn and soybeans at Wye Research and Education Center in Queenstown, MD. Stand counts were reported as number of 1,000 plants per acre, with plants counted in a 30 ft length of one corn row and plants counted in an area the size of 1/1000 of an acre in soybean plots. Early season vigor was assessed at 7, 14, and 21 days after planting (DAP) through collection of normalized difference vegetation index (NDVI) readings using a handheld Greenseeker sensor. The sensor was held approximately 1 m from the surface of the ground as the operator walked down the length of one corn or soybean row per plot. Readings were collected constantly as operator walked at a similar speed and are reported as an average of those readings. Corn was harvested when moisture approached 15% and yields are reported in bushels per acre corrected to 15% moisture. Soybeans were harvested when moisture approached 13% and yields are reported in bushels per acre corrected to 13% moisture. Differences among seed lubricant treatments for plant population, early season vigor, and crop yield were analyzed using a mixed model analysis of variance using replication as a random variable using SAS 9.4 software. Coefficient of variation (CV%) are reported as a measure of variability at a test site and values less than 10% indicate enough precision existed to determine a significant difference.

Corn

Table 1. Agronomic management for corn in Low Mu Tech trial.

Planted	10 May 2019
Plot details	four 30" rows
Hybrid	P0843AM
Target population	30,000 plants ac <sup>-1</sup>
Fertility	46 gal of 30% UAN
Herbicides	PRE: Scanner @ 2 pt/ac Acuron @ 2.5 qt/ac Atrazine 4L @ 1 qt /ac
Harvest	10 September 2019

Table 2. Corn population and NDVI readings at 14 and 21 days after planting (DAP) and corn yield, corrected to 15% moisture, by seed lubricant treatment. Corn did not emerge until 10 DAP therefore there were no 7 DAP measurements collected. There was no significant difference for any measurements across seed lubricant treatments at any time after planting.

	14 DAP	21 DAP	14 DAP	21 DAP	Corn yield
	plants ac <sup>-1</sup>		NDVI		bu ac <sup>-1</sup>
Dust	28691	27646	0.31	0.39	177.7
Fluency	28227	27414	0.36	0.41	162.8
Graphite	27065	27414	0.38	0.39	168.8
UTC	28459	27878	0.34	0.33	172.5
Probability > F	0.4127	0.9423	0.2279	0.2492	0.4279
CV, %	5.8	4.9	18.0	19.4	10.7

### Soybeans

Table 3. Agronomic management for soybeans in Low Mu Tech trial.

Planted	7 June 2019
Plot details	seven 15" rows
Hybrid	Asgrow AG39X7
Target population	160,000 plants ac <sup>-1</sup>
Herbicides	PRE: Liberty 280 SL @ 32 oz/ac Medal II @ 1.5 pt/ac Authority First DF @ 6 oz/ac Actamaster SC @ 3 lb/ac POST: Gly Star Plus @ 1 qt/ac
Harvest	6 November 2019

Table 4. Soybean stand and NDVI readings at 7, 14, and 21 days after planting (DAP) and soybean yield, corrected to 13% moisture, by seed lubricant treatment. Soybeans were not harvested at the time of preparation of this report. There was no significant difference for any measurements across seed lubricant treatments at any time after planting.

	7 DAP	14 DAP	21 DAP	7 DAP	14 DAP	21 DAP	Yield
	1000 plants ac <sup>-1</sup>			NDVI			bu ac <sup>-1</sup>
Dust	16.4	16.8	19.4	0.26	0.53	0.39	78.0
Fluency	16.6	18.4	18.8	0.28	0.55	0.44	73.9
Graphite	15.2	18.2	17.6	0.27	0.51	0.42	76.6
UTC	14.2	19.8	17.8	0.25	0.51	0.39	76.1
Probability > F	0.6751	0.5442	0.7977	0.5641	0.8029	0.4188	0.6246
CV, %	21.4	18.3	16.8	10.6	17.7	14.4	6.4

### Results

Based on the data observed in 2019, the DUST soy protein seed lubricant is comparable to other seed lubricants commonly used in Maryland for corn and soybean production. There were no differences in emergence or yield among the treatments for either corn or soybeans, indicating all seed lubricants perform as well as each other and a control plot where no seed lubricant was used. Additionally, there was

no effect of seed lubricant on early season vigor observed in either corn or soybeans in 2019. Additional extension reports will be prepared to include an economic analysis of the use of seed lubricants, as there is a difference in price and amount of product recommended for use. If product performance is similar, as demonstrated in 2019, then product cost and availability will likely be the deciding factors for use of Dust by Maryland producers.