



# Effects of Talc and Graphite on Soybean Treatments Containing Rhizobia

## WHAT YOU'LL LEARN

- Seed should be treated as close to expected planting time as possible to help maximize viable rhizobia on seed.
- Drying time of inoculants should be slowed and drying aids should not be used.
- Treated seed should be stored in a cool warehouse, under 50° F.

## FRESHLY INOCULATED SEED SHOULD NOT BE DRIED TOO RAPIDLY

Cell-Tech<sup>®</sup>, Optimize<sup>®</sup>XC, and TagTeam<sup>®</sup> LCO XC contain rhizobia, which are living bacterial organisms and can be harmed by applications of talc and/or graphite. Anything, including talc and graphite, that dries the seed too quickly after a wet seed treatment application can cause rhizobia desiccation, which has the potential to greatly reduce the amount of on-seed rhizobia colony forming units (cfu).

Any moisture on soybean seeds can cause compounds in the seed coat to be released and become sticky. This can include seed treatments, liquid inoculants, water, and high humidity. To reduce the stickiness or bridging potential, a common practice is for seed treating operations to use talc and/or graphite.

A compatibility study by BioAg<sup>TM</sup> Alliance partner Novozymes was conducted to determine the affect of talc when applied to freshly inoculated seed. Talc, graphite, and blended products have similar drying or water absorption characteristics. The study utilized talc application rates of 1 oz and 0.5 oz and demonstrated that the number of viable rhizobia per seed could be reduced 70% and 55% respectively when applied to wet seed at 70° F. When the talc application occurred one hour after the seed treatment was applied, the impact was reduced to 35% (Table 1).

The application of talc and/or graphite are compatible with wet treated seed for up to two weeks if the seed is

**Table 1. Effect of Talc\* Being Applied to Wet Seed During Seed Treatment Process at 70° F.**

Talc Rate (oz/bu)	Percent Desiccation (% loss of viable rhizobia/seed)
1.0	70
0.5	55
1.0 (after 1 hour seed drying time)	35

Source: Novozymes internal study.

\*Talc, graphite, and blended products all accelerate drying on seed and exhibit similar characteristics.

kept at ≤ 40° F after treatment and prior to planting. As the temperature increases, the application time to safely apply talc and/or graphite diminishes quickly.

The lipo-chitooligosaccharide (LCO) technology molecule is stable under a wide range of conditions; however, special care should be exercised when freshly treated seed containing rhizobia is wet and an application of talc and/or graphite is desired.

## PLANTING-TIME APPLICATION

Talc and/or graphite used with dry treated seed at planting to increase seed flow through planter units can be used without concern. Seed coatings can get rougher and stickier when the coatings absorb moisture. Talc has the ability to smooth the seed surface to help improve seed flow.<sup>1</sup>

Graphite helps lubricate seed mechanisms to reduce friction. Static electricity can also cause seeds to stick together and decrease seed flow. The static electricity develops from low humidity and seed movement within the seed units. Graphite and talc can help reduce static electricity and improve seed flow through the units.<sup>1</sup>

### Sources:

<sup>1</sup>Anderson, D. Talc and graphite: What you need to know before you plant. [www.agweb.com](http://www.agweb.com). Web source verified 3/28/16. 160309100844

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