For field crops

Culbac® Seed Treatments: The first step to a great harvest

Every grower recognizes the importance of getting crops off to a good start at planting. Unfortunately, nature does not always cooperate. Cool temperatures, high winds and soil-borne pathogens are just a few of the stresses seedlings may encounter in their early life.

Culbac® seed treatments can help seedlings through their critical early stages of growth. Culbac® seed treatments are produced through a natural fermentation process and provide several benefits when coated onto seeds:

- Greater root mass development
- Earlier, stronger emergence
- Improved seedling vigor
- Stimulation of beneficial microbes in the rhizosphere

The early benefits provided by Culbac® seed treatments lead to increased yields at harvest. This is demonstrated by the following data from a Kansas field trial. The chart compares yields (in bushels per acre) of soybeans left untreated, treated with **Culbac® Green™ Seed Treatment** and treated with live inoculant using *Bradyrhizobium japonicum*.

Table 1. Comparison of Yields in Seed-treated Soybeans

	Trial 1		Trial 2	
Treatment	**Yield**	**% of Control**	**Yield**	**% of Control**
Control	50.2	100.0	41.9	100.0
Bradyrhizobium	52.0	103.7	41.3	98.6
Culbac®	52.7	104.9	43.2	103.1

	Trial 3		Average	
Treatment	**Yield**	**% of Control**	**Yield**	**% of Control**
Control	48.2	100.0	46.8	100.0
Bradyrhizobium	50.4	104.6	47.9	102.4
Culbac®	51.1	106.0	49.0	104.7

As the above data shows, Culbac®-treated soybeans posted an average yield increase of 4.7% over the controls while those coated with the *Bradyrhizobium* microbial seed treatment had an average yield increase of only 2.3%. As a prebiotic, Culbac® achieves this in part by stimulating indigenous beneficial microbes in the soil, including nitrogen-fixing bacteria such as rhizobia.

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LP-02-004 REV 7-15

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Besides soybeans, Culbac® has also produced good results with numerous other crops, including corn. The table at right compares yields (in bushels per acre) on field corn left untreated, treated with **Culbac® Commercial Seed Treatment** and treated with a live microbial product using *Azospirillium spp*.

Above is a side-by-side comparison of untreated corn and corn treated with **Culbac® Green™ Seed Treatment** at 20 days post-seeding. Note that the seed-treated plant not only has superior root growth, but also better shoot development.

Table 2. Comparison of Yields in Seed-treated Corn

	Trial 1		Trial 2	
Treatment	**Yield**	**% of Control**	**Yield**	**% of Control**
Control	197.0	100.0	149.9	100.0
Azospirillium	211.2	107.2	137.2	91.5
Culbac®	212.4	107.8	138.5	92.4

	Trial 3		Average	
Treatment	**Yield**	**% of Control**	**Yield**	**% of Control**
Control	188.7	100.0	178.5	100.0
Azospirillium	208.3	110.4	185.6	104.0
Culbac®	206.0	109.2	185.6	104.0

As the averages from the three corn trials show, the **Culbac® Commercial Seed Treatment** matched the performance of the live microbial seed treatment as both posted an average yield increase of 4%.

Other advantages Culbac® seed treatments have over live-inoculants is that the Culbac® products have an indefinite shelf-life as well as lower application rates at 2 ounces per 50 lbs. of seed or lower, depending on seed type.

Culbac® seed treatments include the following products:

- **Culbac® Plant Solution:** a liquid prebiotic labeled for seed treatment and other applications.
- **Culbac® Commercial Seed Treatment:** a liquid prebiotic seed coating fortified with a blend of essential micronutrients.
- **Culbac® Green™ Seed Treatment:** a dry prebiotic seed coating.