

Signum[®]

Bio-inducer

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An innovative single-component bio-inducer for soybeans that sets a new standard for efficacy and convenience in seed inoculation.

MAXIMIZE BIOLOGICAL CAPABILITIES OF PLANTS

Signum[®] maximizes the natural capability of soybeans to generate nitrogen so growers can better manage crop inputs and enhance yield.

Three novel technologies stimulate bacteria for aggressive infection, strengthen the cell wall for greater desiccation resistance and enable single-component formulation.

Signum[®]

FEATURES AND BENEFITS

- One component to eliminate product mixing
- Low use rate for ease of seed handling
- Three unique technologies for enhanced crop yield

Precision Laboratories develops products that are innovative, sensible and effective. Signum is an advanced technology produced from a 10-year partnership between Precision and the worldwide leader in biological products, Rizobacter S.A.



Use Rates: 1.0 fl. oz. per 140,000 seeds, or
2.0 fl. oz. per 100 lbs. of seed

Packaging: Case of one, 400 fluid ounce container,
treats 400-140,000 seed units, or 200 cwt.
Case of ten, 40 fluid ounce containers,
treats 40-140,000 seed units, or 20 cwt
per container. Full case treats 400-140,000
seed units, or 200 cwt.

SIGNUM EMPLOYS THREE TECHNOLOGIES

1. Bio-inducer

Stimulates the bacteria during fermentation to produce multiple nodulation determinants in advance of communication with the root in the soil.

The nodulation process starts with molecules produced by soybean roots. This activates surrounding bacteria to produce nodulation determinants. Bio-inducer technology replicates these molecules in the rhizobia fermentation process to stimulate the production of nodulation determinants in advance of seed application. This results in aggressive infection and nodulation on the tap root following germination.

2. Osmoprotection

Strengthens bacteria cell wall to optimize survival during storage and seed application.

This technological advancement is a process that involves pre-stressing the bacteria during fermentation. The result is bacteria that have a thicker cell wall structure than those fermented in traditional processes. The bacteria in Signum have increased longevity in the package, improved desiccation survival when applied on seed and enhanced endurance while in the soil for greater bacterial numbers where and when they are needed at the time of germination.

3. Intra-protector

Provides single-component inoculation capability with extended bacterial survival and enhanced pesticide compatibility.

Signum is the first premium inoculant to utilize intra-protector technology, which enables it to deliver bio-induced, osmoprotected bacteria in a single-component product. This advancement delivers application convenience and accuracy by eliminating the need to mix additional components to achieve pesticide compatibility and bacterial stability on seed.

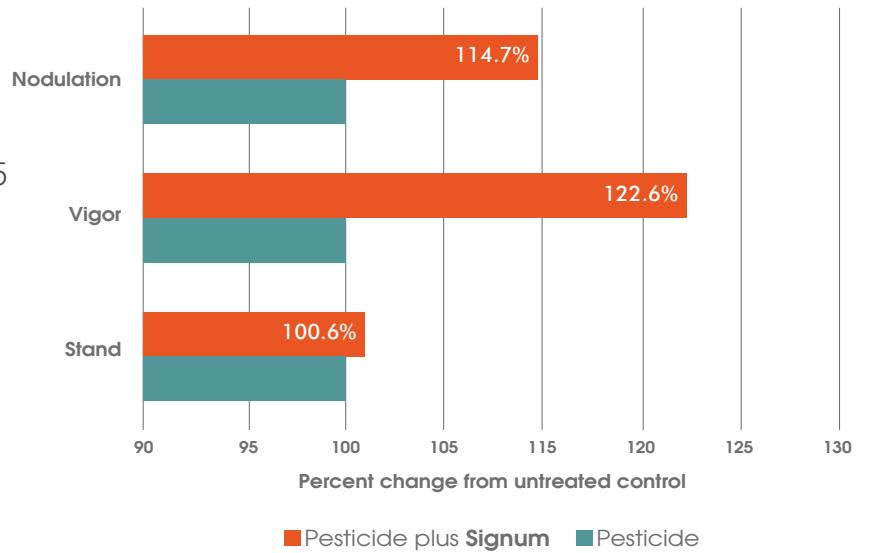
Signum

- Facilitates early communication between the root and the rhizobia bacteria
- Acts early in the plant development process following seed germination
- Activates microbial and plant physiology to maximize capacity to fix nitrogen
- Stimulates mechanisms for abiotic stress resistance

PERFORMANCE DATA

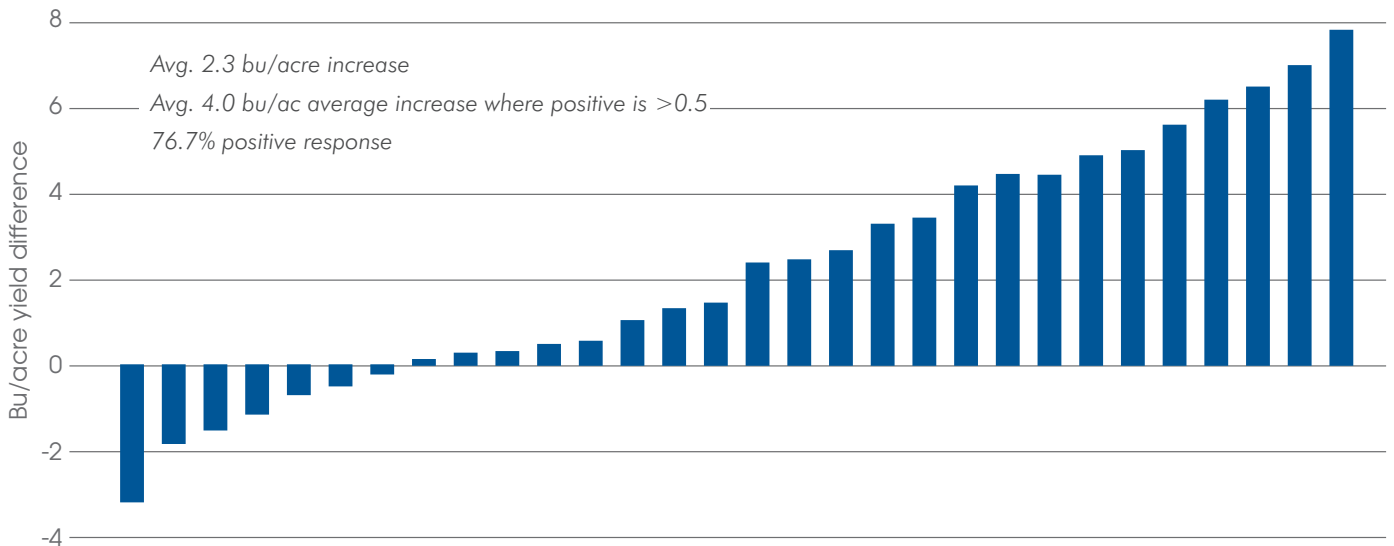
Yield Indicators

Stand, vigor and root nodulation are indicators of plant health during early growth stages. Signum trial data from 2015 with the leading seed treatment packages (CruiserMaxx® Vibrance™, Acceleron™ F&I and Intego™ Suite) demonstrates the additive effect of Signum in early plant development, critical to reaching maximum yield potential.



Performance

Signum consistently delivered on its yield promise throughout three years of replicated trials in multiple soybean-producing states. It increased yield in 77% of trials compared to the control. The average increase was 4 bushels per acre in trials that exceeded 0.5 bushel/acre increase.



2013 – 2015 data from multiple cooperators

Seed Treatment Compatibility

For a complete compatibility chart, go to http://www.precisionlab.com/resources/seed_enhancement_compatibility.pdf

Treatment	Time on seed
Clariva™ Complete Beans	90 Days
CruiserMaxx® Beans	90 Days
Acceleron® (fungicide & insecticide)	75 Days
Intego™ Suite	75 Days

Clariva and CruiserMaxx are trademarks of Syngenta Group Company
 Acceleron is a registered trademark of Monsanto Company
 INTEGO is a trademark of Valent U.S.A. Corporation

THE SIGNUM EFFECT

Plants naturally possess mechanisms to respond to certain critical conditions. Signum activates these mechanisms and stimulates the plant to perform better in nitrogen fixation, resistance to abiotic stress and enhanced crop yield.



Signum is a registered trademark of Rizobacter S.A.