

March 30, 2011

SOYBEAN INOCULANTS

AGRONOMY TOPIC OF THE WEEK

Why do we use inoculants with our seed treatment? Rhizobia bacteria, the active ingredient in inoculants, help the soybean plant produce nodules on the roots. Nodules produce the nitrogen that the soybean plant needs for plant growth as well as seed production. This process is called Nitrogen Fixation.

The production of nodules starts when rhizobia bacteria come in contact with the soybean seed or roots. There are natural occurring rhizobia in our soils that help the plant produce nodules; the issues are that over time rhizobia in the soil can lose its ability to produce nodules and not all nodules produce nitrogen. Situations that can cause reduced rhizobia activity would be:

- ◇ Soils that have not had a soybeans crop in the last 3 years such as CRP or corn-on-corn ground
- ◇ Soils that have a pH less than 5.8 or more than 7.8
- ◇ Eroded soils or soils that have organic matters less than 1% (Clay knobs)
- ◇ Soils that have been waterlogged for over 24 hours
 - In 2010, we had rain events that waterlogged our soils, especially last fall's down pour of 3-9" of rain (location dependent) before soybean harvest.
- ◇ Soil surface conditions that exceed 80° F
 - We had a total of 92 days last summer where soil temperatures were at or above 80° F. That total is mostly due to two separate occasions, each 30 days or more, spanning from June 30 to July 30 and August 1 to September 2.

Healthy nodules that are actively producing nitrogen are red or pink in the center. Nodules that are not producing nitrogen will be green, brown or white in color. The more active nodules you have on the plant the more nitrogen fixation can occur allowing you the potential for a higher yield with no other limiting factors being present.

Today's quality inoculants not only have new strains of rhizobia, they have these rhizobia at levels 20 times that of five years ago. New inoculants also contain growth promoters, as well as other biologics, that along with the inoculants, help promote a larger and healthier primary and secondary root system with more root hair formation.

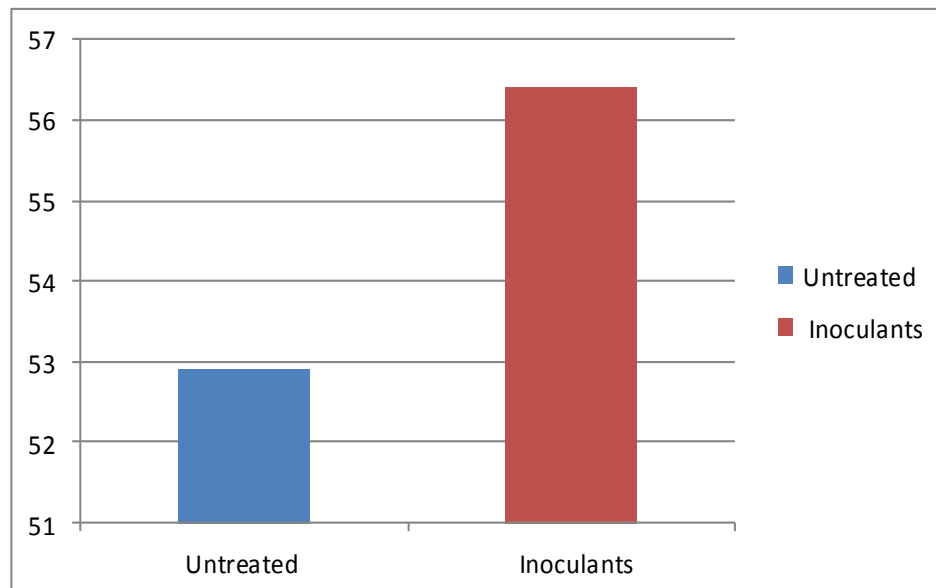


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SOYBEAN INOCULANTS CONTINUED...

By creating a larger root mass the plant is able to increase the uptake of water and essential nutrients, as well as increasing nodule production. Having a larger root mass does not always equate to a higher yield, however any time you have a larger root mass, you help that plant overcome stress. The larger root system and increased nodule production makes for a visually healthier, above ground plant in lighter soils, as well as soils that are high pH or have a history of iron chlorosis.

When we make comparisons on inoculants vs. untreated checks we normally see a 2 bushel/acre yield increase. Last year our results showed a 3.5 bushel/acre yield increase by using Vault HP or Optimize 400 inoculants vs. untreated checks.



With today's quality inoculants we believe you will produce a larger root system, with more and better quality nodule production, that will make the soybean plant better able to overcome yield limiting stresses.

Please contact your local Central Valley Agronomist with questions regarding Soybean Inoculants.