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Do CRP Acres Converted to Soybean Require Inoculation?

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Abstract

Nitrogen fixation is the process of converting atmospheric nitrogen into a usable form for the plant and is critical for producing higher yields in soybean. For nitrogen-fixation to occur, the nitrogen-fixing bacteria known as *Bradyrhizobia japonicum* need to be readily available in the soil or must be applied to the seed to form nodules on the soybean root. Because of the widespread production of soybean across Iowa, most Iowa fields have sufficient infestations of these bacteria to fully nodulate soybean without the use of supplemental inoculants. However, questions frequently arise concerning the need for seed inoculation when planting soybean in fields without a recent history of soybean production, such as fields in the Conservation Reserve Program (CRP).

Keywords

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Do CRP Acres Converted to Soybean Require Inoculation?

By Bob Hartzler, Department of Agronomy

Nitrogen fixation is the process of converting atmospheric nitrogen into a usable form for the plant and is critical for producing higher yields in soybean. For nitrogen-fixation to occur, the nitrogen-fixing bacteria known as *Bradyrhizobia japonicum* need to be readily available in the soil or must be applied to the seed to form nodules on the soybean root. Because of the widespread production of soybean across Iowa, most Iowa fields have sufficient infestations of these bacteria to fully nodulate soybean without the use of supplemental inoculants. However, questions frequently arise concerning the need for seed inoculation when planting soybean in fields without a recent history of soybean production, such as fields in the Conservation Reserve Program (CRP).

Numerous inoculant experiments were conducted across Iowa by Iowa State University during the past five years. This research indicates no need to inoculate soybean if nodulated soybean have been grown in the field during the past 3 to 5 years and if soil pH has been maintained above 6.0. Soybean can benefit from inoculation in fields where soybean has not been grown recently, as with CRP acres, if fields have sandy soils and are irrigated, or if the field is flooded frequently. This recommendation is very similar to other states in the Midwest

For the typical soybean grower in Iowa with a corn-soybean rotation or a corn-corn soybean rotation we rarely see an advantage (or disadvantage) of using an inoculant. The major reason is the high frequency of soybean in crop rotations and the widespread soybean production, both of which keep the inoculant level adequate in most fields due to soybean presence and dust movement. In addition, Iowa soils are fertile and have a significant supply of plant available N that decreases the chance for severe N shortage in Iowa. However, it is recommended that if you put CRP ground into production in 2010, it would be a wise investment to inoculate your seed just to be sure that you do not have a shortage of N. More information about inoculants can be found on www.soybeanmanagement.info.

Adapted from an article originally written by Palle Pedersen in 2008. Bob Hartzler is a professor of agronomy with extension, teaching and research responsibilities.

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