

# INOCULATING SOYBEAN SEED

## PROVEN TO *Increase* YIELD POTENTIAL

Done properly with the right bacteria, the practice supports plant health, productivity

Healthy, early root development is the key to getting a good stand of soybeans. Research shows that inoculating soybean seed is proven to achieve a strong start and produce a higher yield compared to skipping the step.

Like other legumes, soybeans can fix their own nitrogen. But they do it better with the help of the beneficial bacterium *Bradyrhizobium Japonicum*. It can be applied at the seed box or in the furrow, placing it around the area of the seed to help plants produce nodules on the roots where nitrogen fixation occurs. According to Iowa State University, soybeans can obtain up to 75 percent of their nitrogen requirements from the air when nitrogen-fixing bacteria establish functioning nodules on the roots. The ongoing nitrogen fixation supported by the bacteria helps grow a crop that is as healthy and productive as possible.

### Demonstrated ROI

Because the plants are healthier, farmers can expect a payback at harvest from inoculating. For example, soybeans require more than five pounds of nitrogen per bushel. A quality inoculant that helps plants get that nitrogen from the air is much less costly than commercial fertilizer.

Plus, North Dakota State University research has shown inoculated soybeans produce an average 2.1 bushel-per-acre increase in yield and a 0.9% protein advantage compared to untreated seeds over a 13-year period.

### When to use an inoculant

Every farm is different and your agronomist can help you determine what product and formulation will help you meet your goals. However, in general, experts recommend using an inoculant when one or more of these conditions are present:

- You believe native soil populations of *Bradyrhizobia* are low
- Your soil has never hosted soybeans
- Your soil has not hosted soybeans for more than three years
- Your seed quality is not ideal
- Your adjusted soil pH is less than 5.8 after being limed prior to inoculation
- Your soil pH is greater than 8.5
- Your soil contains less than 1% organic matter

- Your soil has been flooding for more than a week
- Your fields have experienced drought
- You have sandy soils
- Your topsoil conditions exceed 80°F
- You have soil erosion in your field
- You have used soil treatments and chemicals that are injurious to soil balance and beneficial bacteria

### Consider new strains when needed

It has been observed that some commercial *Bradyrhizobia* inoculants become less effective the longer they reside in the soil. There is potential benefit to adding high levels of newly selected strains with each planting.

Even native bacteria become less effective over time. As you regularly check nodules throughout the growing period, look at their color. Pink to beefsteak red in the nodule tissue indicates active nitrogen fixation.

### Individual field treatment

No single inoculant treatment works for all fields. The Southern States agronomy team can develop specific recommendations. Just as best management practices call for individual field nutrient prescriptions, so do inoculant applications. An annual prescription is needed to meet the beneficial bacteria needs for each field each year.

### Manage and store properly

Remember, inoculants are living organisms, so treated seed must be stored properly and cannot be reused the following year. Store seed under 77°F and never allow it to freeze. Do not expose seed to direct heat and sunlight. Do not use an atomization sprayer as this may rupture bacterial cells. If you treat seed on-farm, prepare only what you will plant in one day.

### Ready to help

The right inoculant formulation helps ensure you get the healthiest, highest-yielding soybean crop possible. To learn more about how inoculants can improve your growing results, talk with our agronomy team to develop a prescription that's right for your farm.