Multiyear Foliar Fungicide Study on Soybeans

- A three-year multi-site demonstration trial was conducted to determine the potential yield response of soybean to a foliar application of a pyraclostrobin fungicide at the R3 growth stage in the Dakota region.
- Soybean yield potential may be affected by many factors throughout the growing season including management decisions and disease. Fungicide application has been shown to be effective against several common foliar diseases of soybean, resulting in increased yield potential.

Background
Pyraclostrobin fungicides are commonly used fungicides that are effective at controlling multiple diseases. Pyraclostrobins are locally systemic, and have the ability to block spore germination and host penetration when applied prior to disease establishment. Application timing is essential to effective disease control, and fungicide applications made prior to the R1 growth stage, or after the R6 growth stage are often not economical. Foliar diseases are often not an issue until the R3 growth stage. If left unchecked, potential yield loss may occur due to premature leaf drop reducing the photosynthesizing ability of the crop to produce grain.

Soybean reproductive growth stages recommended for foliar applications of fungicides range from beginning flowering (R1) to full seed (R6) soybean growth stages (Figure 1-3). For pyraclostrobin fungicides, it is recommended to make an application when soybean plants are at the beginning pod (R3) growth stage.

Study Guidelines
A multiyear trial was conducted by South Dakota Technology Development and Agronomy to provide farmers with information about the potential yield response of soybeans when applied with a pyraclostrobin fungicide at the R3 growth stage.

Several Genuity® Roundup Ready 2 Yield® soybean products were planted in strip trials across multiple locations throughout South Dakota with typical corn and soybean rotations and primarily minimally tilled soils. Weeds were uniformly controlled, and no insecticide or irrigation was applied. Planting populations varied across locations. Each soybean product was either treated with a foliar fungicide application at the R3 growth stage, or received no treatment at all.
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Results and Discussion
In these trials, average soybean yields increased with an application of a foliar fungicide when compared to untreated checks. This increase in yield occurred across the 3-year study, with an observed average of 2+ bu/acre yield increase for the fungicide-treated soybean plants (Figure 4). This yield increase occurred even under extremely dry conditions, as experienced in 2012. Although heavy disease pressure was not visibly observed at the various testing locations; in these trials, yield continued to appear positively affected by a pyraclostrobin fungicide application at the R3 growth stage.

Conclusion
Based on university recommendations for application timing and also observed in the results of this 3-year trial, applying a pyroclostrobin fungicide to soybean plants at the R3 growth stage may provide a potential yield increase, even in extremely dry conditions and mild disease pressure.

Sources:
Web sources verified 02/05/15.

Figure 4. Average soybean yield comparison between soybean plants treated with a fungicide and an untreated control (UTC) across 3 years.