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Soybean "Plant Health" Studies

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Objective: To evaluate the effect of strobilurin fungicides on soybean yield when leaf disease is minimal.

Methods

Trials established at 5 Purdue Ag Centers—Pinney-Purdue (PPAC), Northeast (NEPAC), Davis (DPAC), Southeast (SEPAC), and Throckmorton (TPAC)—in large fields. Fungicides applied with commercial ground sprayers. Small plots established at one side of each field for comparison; fungicides applied with backpack sprayer.

Fungicide treatments: Headline at 9.2 fl oz/A, Quadris at 9.2 fl oz/A, Folicur at 4 fl oz/A. All fungicides applied at 20 GPA at 50 psi at growth stage R3. All soybeans were planted in 7.5-inch rows.

Results

There was a low level of brown spot and frogeye leaf spot in 2006, and almost no foliar disease in 2007. Fungicide application (Headline and Quadris) increased yield significantly at only one location in 2006. Yield increase was about 3.5 bu/A. Although yield for all fungicide treatments was numerically greater than the untreated yield at SEPAC, the differences at SEPAC were not significant. In the small plots, there was no significant effect of fungicide on yield at any location in 2006.

In 2007 one or more fungicides increased yield significantly at 4 of the 5 locations, at $P=0.10$. Fungicides increased yield about 5 bu/A. Fungicide effects were significant at 2 of the 5 locations in small plots.

Large plots detected more significant differences than did small plots. Although the range of means in small plots was generally greater than the range in large plots, CVs were consistently smaller in the large plots. However, evaluation of many treatments in large plots is not feasible as land is limiting and it takes considerable time to change fungicides in a commercial sprayer. In these trials, we used the same number of replications (3) in both large and small plots.

In future research, more replications and plots longer than 50 ft might be used to see if this would improve the ability to detect effects of fungicides on yield in small plots. Future research should also include a more detailed evaluation of late-season stem and pod diseases.



