HERBICIDE- FUNGICIDE INTERACTION IN SOYBEAN. Rebecca E. Bierman, Dean E. Riechers, Christy L. Sprague†, German Bollero and Wayne L. Pedersen, Graduate Research Assistant, Assistant Professor, Assistant Professor, Assistant Professor and Associate Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61801 and †Michigan State University, East Lansing, MI 48824.

Fungicide seed treatments are becoming increasingly popular for use with glyphosate-tolerant soybeans. A two year field study was conducted to determine whether certain combinations of fungicide seed treatments and POST-applied herbicides affect soybean yield. Thirty-six treatments were evaluated, involving six fungicides [thiabendazole (TBZ), pentachloronitrobenzene (PCNB), captan, TBZ + PCNB + captan (Rival) and Maxim (fludioxonil) and a fungicide- free control] and six herbicides [imazethapyr, imazamox, glyphosate, glyphosate + imazethapyr, glyphosate + cloransulam-methyl and a hand- weeded control]. The study was set up as a split-plot within a randomized complete block design, with seed treatment as the main plot and herbicide as the sub-plot. This study was conducted at three locations across Illinois during the summers of 2002 and 2003, with four replications in each of the six environments.

This experiment was initiated in response to preliminary data suggesting possible negative interaction between certain herbicides and fungicides. Specifically, there was concern of a negative yield effect associated with the combination of Rival, or one of its components (TBZ, PCNB and captan) and imazethapyr. This study was designed to determine whether significant differences exist between the yields of any of these treatments and those of a chemical –free control. All fields had minimal disease pressure and were kept weed-free (mechanically), allowing for the evaluation of chemical interactions independent of the confounding factors of herbicide and fungicide efficacy. Analysis of our data shows that only the no herbicide + Maxim treatment yielded differently than the chemical -free control. Neither fungicide, herbicide, nor fungicide x herbicide significantly affected crop yield. Crop injury after herbicide application was also evaluated. Statistical analysis showed a significant fungicide x herbicide effect on crop injury at seven days after treatment, at alpha= 0.06. However, within each herbicide, none of the fungicides differed from the untreated control. No evidence was found to indicate that any of these chemical interactions affect yield. Earlier reports of fungicide x herbicide interactions, and the variation in crop injury we observed within this study, may reflect root health issues. We speculate that plants with healthier root systems may be able to better withstand environmental stresses encountered later in the growing season, whether they are due to disease pressure, weather or herbicide application.