

INFLUENCING WEED MANAGEMENT STRATEGIES THROUGH STUDIES ON HYBRID BY HERBICIDE INTERACTIONS AND HERBICIDE TOLERANT TECHNOLOGIES. Wayne Fithian, Gary Beland, Thad Haes, Chad Kalaher, Nick Schneider, Rick Smelser, and Brent Tharp, Golden Harvest, Waterloo, 68069.

Herbicide crop safety studies are components of corn product evaluation programs of some seed companies. These studies are typically designed to identify hybrid/herbicide combinations that demonstrate potential yield loss. Some seed companies conducting this work provide sales staff and customers with herbicide safety ratings for their genetics. Information from these herbicide safety trials may be used to address aspects of herbicide management beyond hybrid-herbicide crop safety ratings. The system employed by Golden Harvest demonstrates additional contributions these trials can have on weed management objectives.

Golden Harvest has been conducting corn herbicide crop safety studies since 1983. These studies are conducted at multiple locations throughout the Corn Belt; plots are kept weed-free to eliminate the influence of weed efficacy differences among herbicides tested. Herbicide programs are chosen based on popularity, and herbicide use rates are selected based on the most commonly used rate within label recommendations. Herbicide ratings are determined based on grain yield response and are provided only for those programs tested. Generalization across herbicide families is avoided; Golden Harvest data have consistently shown differences in hybrid safety among herbicides of similar modes-of-action.

Currently used soil-applied herbicides have shown no long term crop safety differences among programs tested and have revealed very few hybrid-by-herbicide interactions. Conventional post emergence herbicide studies, however, have consistently shown hybrid-by-herbicide interactions. Environment can also strongly influence hybrid response to these herbicides, but hybrid sensitivity differences are real and should be considered in an overall management plan. Most herbicide programs are tested at more than one crop stage or height to determine how application timing can be used to reduce yield loss with sensitive hybrid/herbicide combinations.

Crop safety studies on herbicide tolerant seed products determine hybrid/variety response to soil-applied and/or tank-mix herbicide partners used to compliment weed control in a herbicide tolerant cropping system (i.e. conventional herbicides used with glyphosate on glyphosate tolerant corn). Soil-applied herbicides and tank-mix partners provide important weed management support and help reduce risk of weed escapes. Golden Harvest herbicide research has revealed minimal yield loss risk associated with soil-applied and tank-mix partners used with glyphosate in glyphosate tolerant corn and soybeans.

Golden Harvest combines research trends with herbicide use recommendations and weed efficacy performance information from universities and crop protection companies to develop weed management guidelines. The goals of these guidelines are to provide growers sustainable herbicide management options that control weeds and reduce risk while maximizing productivity.