

IMPACT OF CHLORPYRIFOS APPLICATION TIMING ON HERBICIDE RESPONSE IN STS VS NON-STS SOYBEANS. Marsha J. Martin, Mick F. Holm and Gregory R. Armel. Development Representative, Columbus, OH 43235, Development Representative, Waunakee, WI 53597 and Product Development Specialist, Newark, DE 19714. DuPont Crop Protection.

Synchrony® XP is a premix of chlorimuron-ethyl plus thifensulfuron-methyl at a 3.1:1 ratio used for preplant, preemergence, or postemergence control of several broadleaf weeds in soybeans. Chlorpyrifos is an organophosphate insecticide that is used to control many insects including soybean aphids (*Aphis glycines*) which has become a pest of growing concern in many soybean producing regions. Currently, Synchrony® XP can not be applied in mixtures with organophosphate insecticides like chlorpyrifos because of increased potential for crop response. However, based on previous research, Synchrony® XP can be safely applied 14 days before or after an organophosphate application in soybeans. Since several varieties of glyphosate tolerant soybeans now contain stacked resistance to sulfonylurea herbicides (sulfonylurea tolerant soybeans- STS™ soybeans), the question was whether this STS™ trait would afford improved crop tolerance with chlorpyrifos plus Synchrony® XP mixtures or more importantly whether STS™ soybeans would allow for greater flexibility when it comes to making separate applications of Synchrony® XP and chlorpyrifos to soybeans in the same growing season.

Studies were conducted in 2006 at 8 locations in Iowa, Illinois, Michigan, Minnesota, Ohio, and Wisconsin to evaluate Synchrony® XP (7.5 and 15 g ai/ha) alone and in mixtures or sequential applications with chlorpyrifos at 1120 g ai/ha (7 and 14 days before and after chlorpyrifos applications) on both STS™ and non-STS™ soybeans. Glyphosate was applied, as needed, to help maintain weed free conditions.

As expected, mixtures of Synchrony® XP plus chlorpyrifos caused significant response (53-61%) on non-STS™ soybeans and this response was significantly greater than responses observed with either material applied alone. Crop response from these mixtures was still prevalent at 56 days after treatment. When following label recommendations requiring chlorpyrifos applications either 14 days before or after Synchrony® XP on non-STS™ soybeans, crop response was similar to when Synchrony® XP was applied alone without any additional insecticide applications. However, when mixtures of chlorpyrifos plus Synchrony® XP were applied to STS™ soybeans these mixtures only caused 6 to 8% crop response after 7 days. In addition, the four sequential application timings for Synchrony® XP before or after chlorpyrifos applications averaged less than 7% response on STS™ soybeans after 7 days. By 14 days after treatment, the tank mix and sequential applications on STS™ soybeans were at less than 2.5% injury compared to 0% injury from the materials alone. All crop response observed on STS™ soybeans was considered transient as it dissipated entirely by 28 days after treatment.