

IMPORTANCE OF ADJUVANT SYSTEM FOR GLYPHOSATE HERBICIDE COMBINATIONS IN SOYBEANS. Nathan R. Johannang, Bryan G. Young, Dawn E. Refsell, and Gordon K. Roskamp, Researcher, Professor, Southern Illinois University, Carbondale, IL 62901, Extension Specialist, University of Illinois, Urbana, IL 61801, and Professor, Western Illinois University, Macomb, IL 61455.

Field studies were conducted in 2008 at six locations in Illinois to determine the influence of adjuvant system on soybean injury and weed control from combinations of glyphosate with either lactofen or fomesafen. Treatments included glyphosate (860 g ae/ha) applied alone and tank-mixed with lactofen (105 and 210 g ai/ha) or fomesafen (165 and 330 g ai/ha). The adjuvant systems evaluated included: no adjuvant, nonionic surfactant (NIS) at 0.5% v/v, crop oil (petroleum) concentrate (COC) at 1.0% v/v, methylated seed oil (MSO) at 0.5% v/v, and high surfactant oil concentrate (HSOC) at 0.5% v/v. Data collected included visual crop injury and weed control as well as soybean yield.

No soybean injury was observed from glyphosate. Soybean injury at 7 to 9 days after treatment from combinations of lactofen or fomesafen with glyphosate was highly variable across sites, ranging from 5 to 57% and 5 to 33%, respectively. At most locations, soybean injury from lactofen plus glyphosate was increased when the adjuvant was COC, HSOC or MSO compared with no adjuvant. In contrast, combinations of NIS with fomesafen at 165 g/ha plus glyphosate resulted in greater soybean injury than no adjuvant whereas adjuvant system did not influence soybean injury from fomesafen at 330 g/ha plus glyphosate at 5 of 6 locations.

Control of giant foxtail, common lambsquarters, velvetleaf, common cocklebur, and common waterhemp was at least 90% from glyphosate alone at 14 days after treatment and was not influenced by tank-mix partner or adjuvant system. Glyphosate controlled only 50% or less of annual morningglory species with no improvement in control of tall morningglory with the addition of lactofen at 105 g/ha. However, control of tall morningglory was increased from combinations of lactofen at 210 g/ha with HSOC or MSO. Tank-mixtures of fomesafen plus glyphosate with no adjuvant provided greater tall morningglory control than glyphosate alone, but the addition of adjuvants to fomesafen plus glyphosate usually resulted in control similar to glyphosate alone. Ivyleaf and pitted morningglory control was increased with the addition of either lactofen or fomesafen to glyphosate, and control was further enhanced by increasing the lactofen or fomesafen rate with no adjuvant. The type of adjuvant system used did not affect ivyleaf and pitted morningglory control with either rate of fomesafen or lactofen at 210 g/ha plus glyphosate. However, adding HSOC or MSO to lactofen at 105 g/ha plus glyphosate increased control of ivyleaf and pitted morningglory compared with no adjuvant.