EVALUATION OF HERBICIDE PROGRAMS FOR THE CONTROL OF VOLUNTEER GLYPHOSATE-RESISTANT AND GLUFOSINATE-RESISTANT CORN IN GLUFOSINATE-RESISTANT SOYBEAN. Travis R. Legleiter, Eric B. Riley, Jimmy D. Wait, Kristin K. Payne, and Kevin W. Bradley, Senior Research Specialist, Research Specialist, Research Associate, Graduate Research Assistant, Associate Professor, Division of Plant Sciences, University of Missouri, Columbia, MO 65211.

A field experiment was conducted during 2009 to evaluate herbicide programs for the control of volunteer glyphosate-resistant and glufosinate-resistant corn in glufosinate-resistant soybeans. All treatments were arranged in a randomized complete block design with four replications and were applied at two separate timings; when the average size of volunteer corn reached either 30- or 60-cm in height. Just prior to soybean planting, four rows of glyphosate-resistant and glufosinate-resistant corn were planted in each plot perpendicular to the direction of the soybean rows. All weeds other than volunteer corn were removed from the experimental area for the duration of the experiment. Treatments included glufosinate at 0.45, 0.59, and 0.74 kg/ha, glufosinate at 0.45 kg/ha plus clethodim, fluazifop-P, quizalofop-P, and imazaquin at rates recommended for either 30- or 60-cm tall volunteer corn, and also clethodim, fluazifop-P, quizalofop-P, and imazaquin at rates recommended for either 30- or 60-cm tall volunteer corn applied without glufosinate. Late-season counts of volunteer glyphosate-resistant and glufosinate-resistant corn plant density revealed that much higher control of glyphosate- and glufosinate-resistant corn was achieved at the 30 compared to the 60-cm application timing. Applications of 0.45, 0.59, or 0.74 kg/ha glufosinate alone at either application timing provided no reductions in glufosinate-resistant corn plants. However, all rates of glufosinate provided almost complete elimination of glyphosate-resistant corn at the 30-cm application timing, but only slight reductions in the density of glyphosate-resistant corn when applied at the 60-cm application timing. Glufosinate was not antagonistic to clethodim, quizalofop-P, fluazifop-P, or imazaquin at either the 30- or 60-cm application timing. Soybean yields ranged from 3638 to 3997 kg/ha among all treatments and there were few differences between herbicide-treated or untreated plots. Results from these experiments indicate that applications of glufosinate alone can provide good control of volunteer glyphosate-resistant corn less than 30-cm in height and that glufosinate can be applied in combination with clethodim, quizalofop-P, fluazifop-P, and imazaquin for the control of volunteer glyphosate- or glufosinate-resistant corn in glufosinate-resistant soybean.

2009 North Central Weed Science Society Proceedings 64:18.