

INFLUENCE OF HORSEWEED HEIGHT ON THE FOLIAR EFFICACY OF SAFLUFENACIL. Tracy G. Mellendorf, Bryan G. Young, and Joseph L. Matthews, Graduate Research Assistant, Professor, and Researcher, Department of Plant, Soil, and Agricultural Systems, Southern Illinois University, Carbondale, IL 62901.

Field studies were conducted in 2007 and 2008 near Murphysboro, Illinois to evaluate the influence of horseweed plant height on the foliar efficacy of saflufenacil. The horseweed population was comprised of at least 90% glyphosate-resistant horseweed as determined by previous research at this site. Herbicide treatments included six rates of saflufenacil (0, 25, 50, 75, 100, and 125 g ai/ha) applied alone and in combination with glyphosate (840 g ae/ha). Glyphosate (840 g/ha) and paraquat (840 g ai/ha) were included as standards for comparison. The formulation of glyphosate used in this research did not include a full load of activator adjuvant. Crop oil concentrate (1 % v/v) was included in each treatment and liquid ammonium sulfate (5 % v/v) was added to every treatment except paraquat. Plot size was 3 by 9 meters with four replications arranged in a randomized complete block design. Prior to herbicide application 12 and 18 horseweed plants, in 2007 and 2008 respectively, were flagged per plot and original height was recorded. Plant height was categorized into four groups: <15, 15 to 30, 30.5 to 45, and >45 cm. Visual evaluations of control for individual plants and the entire plot were recorded at 7 and 14 days after treatment (DAT). Horseweed plant shoots were harvested at the end of season and dry weights were determined.

Control of horseweed with glyphosate applied alone was less than 30%, further confirming the presence of glyphosate-resistant plants. At 7 DAT all treatments with saflufenacil and paraquat provided at least 90% control. At 14 DAT saflufenacil applied alone at the lowest rate of 25 g/ha provided less control than all other treatments that included saflufenacil. Saflufenacil applied at 50 g/ha or greater resulted in at least 97% control, regardless of horseweed height at application. Herbicide efficacy was slightly reduced as horseweed height increased for saflufenacil at 25 g/ha applied alone. The addition of glyphosate to saflufenacil did not improve herbicide efficacy for rates of saflufenacil 50 g/ha or greater. Control of horseweed from paraquat declined over time due to plant regrowth from the apical meristems. The extent of horseweed regrowth from applications of saflufenacil alone was less than paraquat and even less frequent for saflufenacil and glyphosate tank-mixtures.