

EFFICACY OF GLYPHOSATE APPLIED ALONE OR IN COMBINATION WITH CARFENTRAZONE-ETHYL ON FOUR ANNUAL WEED SPECIES. Steven R. King, Assistant Professor, Montana State University, Southern Agricultural Research Center, Huntley, MT 59037.

An experiment was performed in 2005 to evaluate the efficacy of glyphosate applied alone or in combination with carfentrazone-ethyl for the control of common lambsquarters (*Chenopodium album*), common sunflower (*Helianthus annuus*), kochia (*Kochia scoparia*), and wild buckwheat (*Polygonum convolvulus*). Glyphosate treatments were applied at three rates (0.34, 0.69, and 1.38 lb ai/A), with or without 0.007 lb ai/A carfentrazone-ethyl, and at two different weed sizes (1 and 4 inch). Additional treatments of 0.007 lb ai/A of carfentrazone-ethyl alone and 0.75 lb ai/A of paraquat alone were also evaluated. Herbicide treatments were arranged factorially in a randomized complete block design and replicated four times. The main effects of glyphosate rate, the addition of carfentrazone-ethyl, and weed size were all determined to be significant for the control of common lambsquarters (CHEAL), common sunflower (HELAN), and kochia (KCHSC). The main effects of glyphosate rate and the addition carfentrazone-ethyl were determined to be significant for the control of wild buckwheat (POLCO). Control of 1 inch tall CHEAL increased from 41 to 76%, 45 to 76%, and 48 to 81% when 0.007 lb ai/A of carfentrazone-ethyl was added to 0.34, 0.69 and 1.38 lb ai/A of glyphosate, respectively. No increase in the control of 4 inch tall CHEAL was observed when 0.007 lb ai/A of carfentrazone-ethyl was added to any rate of glyphosate. No difference between the control of 1 and 4 inch tall CHEAL occurred within an individual glyphosate rate due to the addition of carfentrazone-ethyl. A significant interaction of glyphosate rate by weed size was observed for CHEAL control, where CHEAL was not affected by glyphosate rate when applied to 1 inch tall CHEAL. However, CHEAL control increased from 66% with 0.34 lb ai/A of glyphosate to 86 and 91% with 0.69 and 1.38 lb ai/A of glyphosate, respectively, when applied to 4 inch tall CHEAL. Control of 1 inch tall HELAN increased from 43 to 79%, 43 to 81%, and 48 to 89% due to the addition of when 0.007 lb ai/A of carfentrazone-ethyl to 0.34, 0.69 and 1.38 lb ai/A of glyphosate, respectively. No difference in control of 4 inch tall HELAN occurred when carfentrazone-ethyl was added to any rate of glyphosate. Control of 1 inch tall KCHSC and POLCO also increased due to the addition of carfentrazone-ethyl to the three glyphosate rates. No difference was observed in the control of 4 inch tall KCHSC or POLCO due to the addition of carfentrazone-ethyl to any glyphosate rate. Results indicate that the addition of 0.007 lb ai/A carfentrazone-ethyl to 0.34, 0.76 and 1.38 lb ai/A of glyphosate may increase the level of control of 1 inch tall CHEAL, HELAN, KCHSC, and POLCO. The addition of carfentrazone-ethyl to glyphosate treatments applied to 4" taller weeds did not increase the level of control to that provided by glyphosate alone.