

RESPONSE OF TWO COMMON LAMBSQUARTERS BIOTYPES TO GLYPHOSATE. Andrew R. Kniss, Stephen D. Miller, Robert G. Wilson, and Philip H. Westra, Assistant Research Scientist and Professor, Department of Plant Sciences, University of Wyoming, Laramie, WY 82071, Professor, Department of Agronomy and Horticulture, University of Nebraska, Scottsbluff, NE 69361, and Professor, Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523-1177.

Repeated exposure of a weed population to nearly any herbicide increases the potential for resistance, but also for development of increased tolerances and/or escape mechanisms. Common lambsquarters has been noted recently as having the ability to survive in glyphosate-resistant cropping systems to produce seed either by avoidance mechanisms or a low-level tolerance to the glyphosate. Control of lambsquarters with glyphosate has been variable, and previous researchers have concluded that inconsistent common lambsquarters control was more a function of poor management decisions and unfavorable weather rather than differential levels of tolerance within a population. Field studies conducted in Wyoming have confirmed that common lambsquarters biotypes can indeed respond differently to glyphosate applications. Under field conditions, two extreme biotypes differed in mortality by 60% when treated with 840 g ae glyphosate ha⁻¹. This difference between biotypes was confirmed in greenhouse dose-response studies where a three-fold difference in susceptibility was observed with respect to LD₅₀ values. Results of ¹⁴C-glyphosate translocation studies were inconsistent, and therefore differential translocation between biotypes is likely not the mechanism responsible for the observed differences in whole-plant response.