CONTINUING RESEARCH INTO COMMON LAMBSQUARTERS CONTROL WITH GLYPHOSATE. Andrew R. Kniss, Assistant Professor, Department of Plant Sciences, University of Wyoming, Laramie, WY 82071.

A field study was conducted in Laramie, Wyoming in 2007 to elucidate factors that may contribute to poor glyphosate efficacy. The field study was located on a site where over 150 biotypes of common lambsquarters had been planted and allowed to produce seed 2 yr earlier in order to ensure wide genotypic and phenotypic variability across the study. A total of 120 individual common lambsquarters plants were randomly selected along 8 transects located 3 m apart across the study site. Stem diameter at ground level, height, width, and leaf thickness of each plant were measured for each plant. Glyphosate with or without ammonium sulfate was applied at a rate of 840 g ae/ha along the transects 1 d after plant measurements were taken. Plant mortality was evaluated 28 d following herbicide application. Preliminary analysis indicated that a polynomial model may be appropriate, so a generalized linear model was fit to the data using mortality data as a binary response variable and all measured variables and their squared values as independent variables. Plant height, leaf thickness, and the squared terms associated with these variables were determined to have a significant impact on plant mortality in response to glyphosate application. The significant squared terms indicate that some unquantified physiological process may cause a decrease in glyphosate susceptibility during early growth followed by increasing susceptibility as the plant continues to age.

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