

TWO DIFFERENT TRIAZINE RESISTANT MECHANISMS IN WATERHEMP: MANAGEMENT IMPLICATIONS. Bradley S. Dixon, William L. Patzoldt, and Patrick J. Tranel, Undergraduate Research Assistant, Graduate Research Assistant, and Assistant Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61801.

Studies were conducted on greenhouse-grown waterhemp plants to compare atrazine responses among populations that were segregating for resistance (SegR), uniformly sensitive (UniS), or uniformly resistant (UniR). Previous research has shown that the UniR biotype has a triazine-insensitive D1 protein, whereas the SegR biotype has a different triazine-resistance mechanism. Crossing experiments confirmed that the SegR resistance mechanism exhibits nuclear inheritance. Atrazine dose-response experiments revealed that the SegR and UniR populations were 16-fold and greater than 770-fold resistant, respectively, relative to the UniS population. The SegR population exhibited resistance to cyanazine, but not to metribuzin, linuron, or pyridate. Soil-applied atrazine treatments effectively controlled the SegR population.