

INHERITANCE OF EVOLVED GLYPHOSATE RESISTANCE IN HORSEWEED. Ian A. Zelaya, Micheal D.K. Owen and Mark J. VanGessel, Research Associate and Professor, Department of Agronomy, Iowa State University, Ames, IA 50011–1011 and Professor, Department of Plant and Soil Sciences, University of Delaware, Georgetown, DE 19947–9575.

N–(phosphonomethyl) glycine (glyphosate) resistance has evolved in several horseweed [*Conyza* (= *Erigeron*) *canadensis* (L.) Cronq.] populations within United States agroecosystems. A near-homozygous resistant population was isolated through two cycles of recurrent selection of a Houston, DE population. Susceptible and pristine horseweed populations were collected in Georgetown, DE and Ames, IA, respectively. Inheritance of glyphosate resistance in horseweed was investigated by performing reciprocal crosses between confirmed resistant and susceptible phenotypes. Segregation ratios of the first (F_1) and second (F_2) filial generations, and the backcrosses of the F_1 to the susceptible and resistant parents, suggested that glyphosate resistance in horseweed was governed by a single, incompletely-dominant, nuclear gene. Assisted crosses confirmed that while essentially autogamous, horseweed can cross-pollinate (0–15%). The simple inheritance model, the biology of horseweed, and the survival of F_1 plants when exposed to the recommended glyphosate field rate, explains the rapid evolution and large geographical distribution of glyphosate resistant horseweed populations. For further details refer to: Zelaya, I. A., M. D. K. Owen, and M. J. VanGessel. 2004. Inheritance of evolved glyphosate resistance in *Conyza canadensis* (L.) Cronq. Theor. Appl. Genet. 109: *in press*.