

FIELD HYBRIDIZATION RATES BETWEEN WATERHEMP AND SMOOTH PIGWEED.
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The genus *Amaranthus* includes several weedy species of agricultural importance. Several populations of various amaranth species have been documented to be resistant to single or multiple herbicides. Hybridization among amaranths may contribute to their success as weeds and may be a route for resistance transfer among species. Hybrids have been obtained previously from greenhouse crosses with a dioecious amaranth as the female parent and another dioecious or monoecious species as the male parent. However, little has been done to establish the likelihood of hybridization under field conditions or using a monoecious species as the female parent. The purpose of this ongoing study is to determine the frequency of hybridization between smooth pigweed and waterhemp under field conditions. To do this, parents carrying different alleles of the gene encoding acetolactate synthase were used. The male parents were homozygous for a dominant herbicide-resistance allele while female parents were homozygous for a herbicide-sensitive form. Progeny of hybrid nature were thus detected via herbicide selection. The fidelity of the herbicide selection assay was evaluated using both a restriction enzyme polymorphism assay and DNA content analyses. Using these procedures, field hybridization rates between smooth pigweed (female parent) and waterhemp (male parent) as high as 2.7% were detected. Preliminary data suggest that hybrids from the reciprocal cross may occur at about 10-fold higher frequencies.