

FIELD EVALUATION OF COMMON WATERHEMP FOR SUSPECTED RESISTANCE TO PROTOPORPHYRINOGEN OXIDASE-INHIBITING HERBICIDES. Dana B. Harder, Kelly A. Nelson, and Reid J. Smeda, Undergraduate Student Assistant, Assistant Professor, and Assistant Professor, Agronomy Department, University of Missouri, Columbia, MO 65211.

Protoporphyrinogen oxidase-inhibiting (PPO) herbicides have been the major weed management option available to farmers raising soybeans without postemergence (POST) use of glyphosate. There have been reports of poor common waterhemp (*Amaranthus rudis* Sauer) control with certain PPO herbicides. Research was conducted at a location in northeast Missouri with suspected resistance. This research evaluated the response of common waterhemp to preemergence (PRE) and POST PPO-inhibiting herbicides to determine resistance. POST applications of mesotrione at 0.11 kg ai/ha and dicamba/diflufenzopyr at 0.29 kg ai/ha controlled common waterhemp 99 and 72%, respectively. Fomesafen at 0.33 kg ai/ha, aciflourfen at 0.42 kg ai/ha, lactofen at 0.22 kg ai/ha, flumiclorac at 0.03 kg ai/ha, and carfentrazone at 0.009 kg ai/ha controlled common waterhemp 57, 34, 46, 26, and 14%, respectively, 21 days after treatment (DAT). A PRE application of isoxaflutole at 0.07 kg ai/ha, flumioxazin at 0.07 kg ai/ha, and sulfentrazone at 0.24 kg ai/ha controlled common waterhemp up to 4 WAT. Control remained above 90% up to 6 WAT and then declined over time. PRE treatments of isoxaflutole, flumioxazin, sulfentrazone were then treated with lactofen at 0.22 kg ai/ha to determine the population of plants resistant to this herbicide. Control of the original population ranged from 43 to 61%. The POST PPO-inhibiting herbicides caused minor leaf necrosis, and regrowth from axillary buds was observed.